

III.—*Materials for a Flora of the Malayan Peninsula*.—By SIR GEORGE KING, K.C.I.E., M.B., LL.D., F.R.S., &c., late Superintendent of the Royal Botanic Garden, Calcutta.

No. 13.

The present contribution carries these *Materials* to the end of the *Calycifloræ*. The orders included in it are *Datisceæ*, *Droseraceæ*, *Passifloraceæ*, *Begoniaceæ*, *Ficoideæ*, *Umbelliferæ*, and *Cornaceæ*. It has not been possible for me to prepare my account of the Calycifloral orders in the exact sequence followed in Hooker's *Flora of British India*; each order, however, bears the ordinal number given to it in that work. The species described in the present paper are 47 in number, and of these fourteen belonging to the genus *Begonia*, and two belonging to *Mastixia*, are new to science. I hope in future contributions to take up the orders belonging to the groups *Corollifloræ* and *Incompletæ*.

Order LXVII. DATISCACEÆ.

Trees or herbs. *Leaves* petioled, simple or pinnate; stipules 0. *Flowers* small, dioecious in the Indian species, clustered, racemed or paniced. MALE: calyx-tube short, teeth 3-9; petals 0; stamens 4-25. FEMALE: calyx-tube adnate to the ovary, lobes 3-8 short; petals 0; ovary 1-celled, open or closed at the vertex; styles lateral, alternating with as many parietal placentæ, simple or 2-partite; ovules very many, ascending or horizontal. *Capsule* coriaceous or membranous, opening at the vertex between the styles. *Seeds* very many, small, albuminous; embryo straight, radicle next the hilum.—DISTRIB. Species 4; natives of the Mediterranean, Central Asia, Java, and North-West America.

TETrameLES, R. Br.

A large tree. *Leaves* petioled, ovate, pubescent beneath at least on the nerves. *Flowers* dioecious, appearing before the leaves; males paniced, females in elongate racemes, clustered near the ends of the branchlets. MALE: calyx-lobes short; teeth 4, ovate, one or two smaller teeth sometimes added; petals 0; stamens 4, opposite the calyx-teeth, inserted round a depressed disc; rudiment of the ovary 0 or quadrangular. FEMALE: calyx-tube ovoid; teeth 4 short; petals 0; styles 4, short, stigmas simple somewhat club-shaped. *Capsule* ovoid, with 4 lines or slight ridges, membranous, opening at the top between the styles. *Seeds* very many, minute, flattened, ellipsoid, testa very lax and extending much beyond the nucleus as a loose membrane.

1. *T. NUDIFLORA*, R. Br. in Benn. Pl. Jav. Rar. 79, t. 17; A.DC. Prodr. XV. pt. I. 411; Bedd. Fl. Sylv. t. 212; Brand. For. Fl. 245; Kurz For. Fl. 535; Clarke in Hook. f., Flor. Brit. Ind. II, 657. *T. Graham-iana*, Wight Ic. t. 1956; A.DC. l. c. *T. rufinervis*, Miq. Fl. Ind. Bat. I. pt. I. 726; A.DC. l. c. *Anictoclea Graham-iana*, Nimmo in Grah. Cat. Bomb. Pl. 252.—*Indeterminata*, Wall. Cat. 9045.

Andaman Islands; *Kurz*.—DISTRIB. Eastern Himālaya, Burma and Java.

Order LIV. DROSERACEÆ.

Herbs with large glandular hairs, exuding a viscid fluid. *Flowers* hermaphrodite, regular. *Petals* 5 hypogynous, rarely perigynous, thin, nerved, imbricate, marcescent, free or slightly united. *Stamens* 4 to 20, hypogynous or slightly perigynous; filaments free or slightly monadelphous, subulate or filiform: anthers 2-celled; disc none. *Ovary* free or adherent by its base to the calyx, globose or ovoid, 1-celled; *styles* 5, sometimes 3, simple or bifid; *stigmas* capitate; placentas parietal, equal in number to the styles; *ovules* and *seeds* numerous. *Capsule* membranous, 1-to 5-celled. *Seeds* with fleshy albumen; *embryo* cylindric or minute.—DISTRIB. Species about 100; in temperate and tropical regions generally, but absent from the Pacific Islands.

DROSERA, Linn.

Small perennial herbs. *Leaves* radical and rosulate, or cauline and alternate, bearing many large glandular viscid hairs, usually circinate in veneration, with scarious stipules adnate to the petiole, or exstipulate. *Calyx* persistent, free from the ovary, 4-to 8-partite or sepals free. *Petals* 4 to 8, hypogynous or very slightly perigynous, marcescent. *Stamens* equal in number to the petals, hypogynous or slightly perigynous. *Ovary* 1-celled; *styles* 2 to 5; *ovules* parietal, numerous. *Capsule* loculicidally 2-to 5-valved. *Seeds* numerous, obovoid-ellipsoid (in the Indian species); testa black, smooth, reticulate.—DISTRIB. Species about 90, cosmopolitan, but absent in Polynesia; Australia.

Leaves cuneate-spathulate, all radical	...	...	1 <i>D. Burmanni</i> .
Leaves peltate-lunate with long narrow petioles, some			
radical the others cauline	...	...	2 <i>D. peltata</i> .
Leaves linear, all cauline	...	...	3 <i>D. indica</i> .

1. *DROSERA BURMANNI*, Vahl Symb. III, 50. *Leaves* all radical, rosulate, cuneate-spathulate, .5 to 1.5 in. long, stipules half as long as the petiole. Peduncles erect, 3 to 8 inches high, naked, glabrous. *Flowers* racemose, their pedicels glabrous, erect in fruit; calyx minutely papillose: styles 5, simple. Don, Prod. Fl. Nep. 212; DC. Prod. I, 318; Roxb. Fl. Ind., II, 113; Wall. Cat. 1242; Wight, Ill. t. 20; Wight, Ic.

944; W. & A. Prod. Fl. Penins. Ind. 34; Planch. in Ann. Sc. Nat. Ser. III. Vol. IX, 190; Miq. Fl. Ind. Bat., Vol. 1, pt. II, 120; Suppl. 160; Hf. & Th. in Journ. Linn. Soc. II., 82; Dalz. & Gibs. Fl. Bomb., 12; Kurz in Journ., As. Soc., Beng., 1876, pt. II, 310; Clarke in Hook. fil. Fl. Br. Ind. II, 424; Trimen, Fl. Ceyl. pt. II, 145.

MALACCA: Province Wellesley, and probably in the other provinces.—

DISTRIE. British India, Ceylon, the Malay Archipelago, China, Japan, Africa, Australia, up to elevations of 8,000 feet.

2. *DROSELA PELTATA*, Sm. ex Willd. Sp. Pl. I, 1546. *Stem* erect, leafy, 3 to 12 in. high, simple or branched near the apex. *Leaves* sub-rosulate, also scattered and alternate on the stem, peltate-lunate, with very long glandular hairs, .2 to .25 in. broad (including the radiating hairs); the petiole much longer than the laminae, very slender. *Racemes* 1 to 3 in. long, terminal or sub-terminal; flower-pedicels .35 to .75 in. long, glabrous. *Sepals* ovate, glabrous, erose or fimbriate. *Styles* 3, fimbriate. *Seeds* as in *D. indica*, III. DC. Prod. I, 319; Sm. Exot. Bot., I, 41; Don Prod. Fl. Nep., 212; Wight. t., 20; W. & A. Prod. Fl. Penins. Ind., I, 34; Planch. in Ann. Sc. Nat. Ser. III, Vol. IX, 296; Kurz in Journ. As. Soc. Beng., 1876, pt. 2, 310; Clarke in Hook. fil. Fl. Br. Ind., II, 424; Trimen, Fl. Ceyl. pt. II, 146. *D. lunata*, Ham.: DC. Prod. I, 319; Wall. Cat., 1243; Hook. Ic. Pl. 54; Planchon l.c., 296; Miq. Fl. Ind. Bat., II, Pt. 2, 120. *D. lunata, gracilis* et *D. foliosa*, Hook. fil. Journ. Linn. Soc., II, 82; 297, 298. *D. Lobbiana* Turcz. (fide Kurz).

MALACCA, SINGAPORE, and probably in some of the other provinces.—

DISTRIE. Malay Archipelago, British India, and Australia.

3. *DROSELA INDICA*, Linn. Sp. Pl. 282. *Stem* 2 to 12 in. long, decumbent, usually simple. *Leaves* alternate, scattered, 1 to 3 in. long, linear, not much broader than the glabrous petiole, very glandular-pubescent. *Racemes* 2 to 6 in. long, leaf-opposed; flower-pedicels .35 to .75 in. long, rusty-pubescent. *Sepals* lanceolate, minutely glandulose or sub-glabrous. *Styles* 3, bifid to the base. *Seeds* obovoid, much reticulate not scrobiculate. DC. Prod., I, 319; Roxb. Fl. Ind., II, 113; Wall. Cat., 1244; Wight Ill. t., 20; W. & A. Prod. Fl. Penins. Ind., 34; Planch. in Ann. Sc. Nat. Ser., III, Vol. IX, 209; Miq. Fl. Ind. Bat., Vol. I, Pt. 2, 120; Hf. & Th. in Journ. Linn. Soc. II, 82; Dalz. & Gibs. Fl. Bomb., 12; Kurz in Journ. As. Soc. Beng., 1876, Pt. II, 310; Trimen Fl. Ceyl., Pt. II, 146; Clarke in Hook. fil. Fl. Br. Ind., II, 424. *D. Finlaysoniana*, Wall. Cat., 3752. *D. serpens*, Planch. l.c., 204.—Rheede, Hort. Malab., X, t. 20.

MALACCA: Province Wellesley, and probably in the other provin-

ces.—DISTRIE. British India, Ceylon, Malayan Archipelago, tropical Australia, and Africa.

Order LI. PASSIFLOREÆ.

Twining herbs or shrubs, rarely erect. *Leaves* alternate, stipulate, entire or lobed, penni- or palmi-nerved, frequently glandular beneath. *Petiole* usually bearing glands. *Stipules* foliaceous or minute, *Tendrils* axillary or 0. *Inflorescence* axillary, cymose, sometimes with one or more branches cirrhone, rarely flowers solitary. *Bracteoles* 3, minute and scattered, or foliaceous and forming an epicalyx, rarely 0. *Flowers* regular, unisexual, or bisexual. *Calyx* tubular at the base, fleshy, subcoriaceous or membranous; segments imbricate, 5. *Petals* 0 or as many as the calyx-lobes, springing from the tube of the calyx, membranous or fleshy, imbricate, marcescent. *Corona* of one or more rows, filamentous or membranous or both, arising from various portions of the calyx-tube, rarely 0; basilar corona urceolate or cup-shaped, surrounding the base of the androecium, sometimes represented by five separate glands of the disc; rarely 0. *Stamens* 5, in a tube or free to the base, perigynous; anthers oblong, 2-celled, basi- or dorsi-fixed, dehiscing laterally or introsely. *Ovary* superior, on a gynophore or subsessile, 1-celled with 3 parietal placentas, rudimentary or absent in the male flowers. *Styles* 1 or 3; stigmas reniform, capitate or flattened. *Ovules* numerous, pendulous, anatropus; funicle expanded into a cup-shaped arillus. *Fruit* baccate or capsular. *Seeds* numerous, ovoid or flattened, often pitted, covered with a fleshy arillus; albumen fleshy, rarely scanty; embryo straight, cotyledons flat leafy, radicle short terete.—*DISTRIB.*: Chiefly tropical; most numerous in South America. Genera about 18; species about 320.

Erect shrubs, without tendrils	...	...	1 PAROPSIA.
Scandent, with tendrils:—			
Fruit pulpy, indehiscent; flowers large	...	...	2 PASSIFLORA.
Fruit dehiscent; flowers small	...	...	3 ADENIA.

1. PAROPSIA, Noronh.

Shrubs. *Leaves* simple. *Flowers* in dense axillary cymes. *Calyx-tube* short; limb 5-parted. *Petals* 5, springing from the base of the calyx-tube. *Corona* of fine threads springing from the tube of the calyx and more or less divided into five phalanges. *Gynophore* short; filaments flat; anthers oblong. *Ovary* subglobose. *Style* short, dividing into three branches; stigmas reniform-capitate. *Fruit* capsular.—*DISTRIB.* Species 4 or 5, natives of tropical Africa and Malaya.

P. VAREIFORMIS, Mast. in Trans. Linn. Soc., XXVII, 639. A shrub or small tree. *Leaves* subcoriaceous, oblong or oblong-lanceolate, acute or shortly acuminate, the base cuneate, the edges entire or (rarely) minutely serrate; both surfaces glabrous except the glandular puberulous

midrib and nerves; the lower with numerous minute adpressed scales; main 6 or 7 pairs spreading, curved; length 2·5 to 5·25 in., breadth 1 to 1·75 in., petiole ·1 to ·2 in. *Flowers* about ·5 in. in diam., on short, rusty-tomentose pedicels ·15 in. long. *Calyx* campanulate, leathery, adpressed-villose outside like the pedicels, the lobes much longer than the tube, unequal, oblong, subacute. *Petals* oblanceolate, smaller than the calyx-lobes. *Corona* single, very short, lanate, in 5 phalanges. *Stamens* 5. *Gynophore* shorter than the corona; ovary villose. *Fruit* ovoid or sub-globose, ·5 to ·7 in. across. Masters in Fl. Br. Ind., II, 600. *P. malayana*, Planch. ex Masters l.c. *Trichodia vareciformis*, Griff. Notul., IV, 571.

MALACCA: Griffith, Manigay, and others. PERAK: Scortechini, King's Collector; a common plant.

I can find no constant characters to separate the two species into which this plant has been divided in the Flora of British India and therefore unite them under the oldest specific name.

2. PASSIFLORA, Linn.

Twining shrubs. *Leaves* simple or palmilobed, usually with glands on the under surface and on the petiole; stipules thread-like or leafy. *Flowers* pedunculate; often involucrate; peduncles simple or cymose. *Bracteoles* 3, small, scattered. *Calyx-tube* fleshy, limb 5-lobed. *Petals* 5, springing from the throat of the calyx. *Corona* of one or more rows of fine threads springing from the throat of the calyx-tube and of one or more membranous folds arising lower down. *Gynophore* surrounded at the base by a shallow membranous cup or basilar corona; filaments 5, flat; anthers oblong, 2-celled, dorsifixed; pollen-grains reticulate on the surface. *Ovary* 1-celled; styles 3, stigmas reniform-capitate. *Fruit* baccate. *Seeds* arillate.—DISTRIB. A genus of about 250 species which are most numerous in tropical and sub-tropical America.

PASSIFLORA HORSFIELDI, Blume, Rumphia, I, 170, t. 52. A slender climber; young branches slightly quadrangular, slender, striate, almost glabrous. *Leaves* membranous, oval or oblong-ovate, subacute sometimes retuse, the base rounded and minutely emarginate; upper surface pale-brown when dry, shining, glabrous, minutely reticulate; lower surface when young sometimes with sparse deciduous hairs, but more usually glabrous from the first, always dull and whitish and with a few flat dark-coloured glands, the transverse veins and reticulations very distinct; main-nerves about 5 pairs, ascending, faint; length 4 to 6 in.; breadth 2·5 to 3·25 in.; petiole ·6 to ·9 in., with two oval flat glands near its middle. *Inflorescence* shorter than the leaves, axillary, about 5-flowered, the flowers 1·25 to 1·5 in. in diam., on slender long pedicels, white tinged with green; corona double, the outer with long erect

filamentous segments; the inner about one-fourth as long, its segments few, lanceolate, incurved. *Stamens* 5; the filaments spreading, clavate; anthers dorsifixed, oblong. *Ovary* ovoid, hirsute, the gynophore nearly as long as the outer corona; styles long, recurved. *Fruit* subglobular, .75 in. in diam. *Disemma Horsfieldii*, Miq., Fl. Ind. Bat., I, Pt. 1, 700.

PERAK; *Scortechini* 655, 2, 192; *King's Collector* 3,078, 4, 104, 5, 936, *DISTRIB.*—Java and Madura.

This is apparently the only species really indigenous in the Malayan Peninsula. There are, however, four American species which have escaped from cultivation. These are:—

P. suberosa, L. A small species with diversely shaped leaves, flowers little more than half-an-inch in diameter and ovoid fruits about the same in length.

P. foetida, L. A species with variable leaves, emarginate at the base, often 3-lobed; recognisable at once by its foetid flowers and 3-leaved fimbriate involucre.

P. edulis, Sims. With deeply 3-lobed serrate leaves, flowers more than an inch across; and globular edible fruit. This is often cultivated under the name of *Granadilla*.

P. quadrangularis, L. A large species with boldly 4-angled stems; handsome fragrant, purple flowers banded with white, 3 to 5 in. across; broadly ovate leaves and large oblique ovate-oblong stipules.

P. laurifolia, L. A more slender species than the last and with smaller flowers of similar colour, with a large 3-leaved or 3-partite involucre of broad segments, and of long filiform stipules; the leaves broadly oblong, entire and shortly apiculate.

3. ADENIA, Försk.

Scandent. *Leaves* entire or palmilobed, usually with two or more flat circular glands on the under surface and with similar glands at the apex of the petiole. *Cymes* axillary, few or many-flowered, on long peduncles, one or more of which is sterile and tendril-like. **MALE FLOWER:** *Calyx* tubular or bell-shaped; limb 5-lobed, lobes leathery, imbricate. *Petals* 5, free, membranous, 1-nerved, springing from the calyx-tube. *Corona* a ring of threads arising from near the base of the calyx-tube, or wanting. *Glands of the disc* 5, opposite the sepals, strap-shaped or capitate. *Andræcium* cup-shaped, membranous beneath; filaments 5, linear-subulate; anthers linear-oblong, 2-celled. *Ovary* rudimentary or 0. **FEMALE FLOWER:** *Calyx* and *corolla* as in the male. *Corona* a membranous fold, springing from near the base of the calyx-tube, or none. *Glands of the disc* 5, strap-shaped, capitate, opposite the sepals. *Staminodes* 5, forming a membranous cup surrounding the base of the ovary, above dividing into barren filaments. *Ovary* globose or elliptic, sessile or stalked; style cylindrical or none; stigmas 3, capitate or flat and dilated. *Fruit* capsular, 3-valved. *Seeds* numerous, attached by long funicles to parietal placentas.—*DISTRIB.* About 40 species, natives of the tropics of the Old World.

NOTE.—The name used for this genus in Hooker's *Flora of British India* is *Modecca*, Lamk. which dates from 1797. Following Engler, I have here used Förskal's name *Adenia*, which dates from 1775.

Leaves always deeply 3-lobed 1 *A. trilobata*.

Leaves entire :—

Leaves minutely peltate at the base; lobes of calyx

long, narrow and reflexed 2 *A. nicobarica*.

Leaves cordate at the base :—

Base broadly and deeply cordate, main-nerves

radiating from the base: flowering peduncles

up to 6 in. long 3 *A. cardiophylla*.

Base slightly cordate: main-nerves pinnate: 4 *A. populifolia* var.

flowering peduncles less than 2 in. long *pentamera*.

Leaves not cordate at the base or only occasionally very

slightly so: main-nerves usually 2 sometimes 3 pairs :—

Nerves and reticulations of leaves distinct 5 *A. acuminata*.

Nerves and reticulations of leaves invisible, the lower

surface of the leaves whitish 6 *A. singaporeana*.

1. *ADENIA TRILOBATA*, Engl. Jahrb., XIV, 375. Many feet in length, glabrous, the bark on the old shoots cinereous, on the young smooth green. *Leaves* remote, membranous, broadly cordate at the base, deeply 3-lobed; the lobes lanceolate, the two outer often auriculate at the base, the sinuses wide, rounded, and each bearing a small gland; main-nerves 5, palmate; the lateral nerves and the reticulations few; length 6 to 9 in.; width 4·5 to 6·5 in.; *petioles* from half as long to nearly as long as the leaf-blades, terete, smooth, not enlarged at the base, the apex with two conical recurved glands. *Peduncles* slender, smooth, terete, axillary, longer than the petioles, umbellulately cymose; flowers few, 3 to 5 in. long, the females somewhat longer than the males. *Calyx* tubular, the lobes short, oblong, subacute. *Petals* narrowly oblong, inserted near the base of the calyx-tube. *Filaments* united into a tube springing from the fundus of the calyx; *anthers* linear-oblong, abruptly acute, the connective produced into a minute point. *Glands* narrowly oblong, blunt, incurved. *Staminodes* in female flower united into a membranous cup. *Rudimentary* ovary in male flower trifold. *Fruit* oblong, scarlet, from 2 to 2·5 in. long when ripe, and 1·5 in. in diam. *Seeds* compressed, sub-obcordate or sub-rotund, scrobiculate, the arillus thin, clear. *Modecca trilobata*, Roxb. Hort. Beng., 49; Roxb. Corom. Plant. III, t. 297; Fl. Ind., III, 133; Wall. Cat., 1234; Kurz, in Journ. As. Soc., Beng., 1877, II, 95; Masters in Hook. fil. Fl. Br. Ind., II, 602.

ANDAMAN ISLANDS; common.—DISTRIB. Northern parts of British India and Burma.

2. *ADENIA NICOBARICA*, King. Slender and slightly branched, glabrous *Stems* minutely sulcate, thin, wiry. *Leaves* membranous,

entire, narrowly elliptic-oblong or lanceolate; the base rounded and minutely bi-glandular, slightly peltate; the apex acuminate, rarely abruptly acute; both surfaces shining; main-nerves only about 4 pairs, interarching broadly and far from the edge; intermediate nerves horizontal; reticulations wide; length 2·5 to 4·5 in.; width ·6 to 1·8 in.; petiole ·4 to ·8 in., compressed, not enlarged at the base. *Peduncles* longer than the petioles but much shorter than the leaves, bearing a filiform tendril and only one or two flowers. *Flowers* rather less than ·5 in. long, green. FEMALE FLOWER unknown. MALE FLOWER ·4 to ·5 in. long. *Calyx* campanulate, deeply divided into 5 linear-oblong, subacute, much reflexed lobes. *Petals* shorter than the calyx and inserted into it below the middle, membranous, reticulate, oblanceolate, their apices truncate and broad. *Glands* short, oblong, truncate. *Anthers* about equal to the petals, oblong, obtuse, cordate at the base; the filaments united into a wide tube. *Fruit* elliptic-oblong, tapered to each end, from 1·5 to 2·3 in. long, and ·75 in. in diam., reddish when dry, smooth. *Seeds* much compressed, sub-orbicular, with a few shallow pits in the centre, and a row of short depressed radiating grooves round the edge, the aril very thin. *Modecca nicobarica*, Kurz in Trimen's Journ. Bot. for 1875, p. 327; Mast. in Hook. fil. Fl. Br. Ind. II, 603.

ANDAMAN and NICOBAR ISLANDS; not uncommon. MALACCA; *Maingay* (Kew Distrib.) 670. PERAK; *Wray* 651, 2781; *King's Collector* 2439; *Scortechini* 633; *Ridley* 10280. PENANG; *Curtis* 1521.

A species distinguished by its entire oblong leaves minutely peltate at the base, by its long narrow reflexed calyx-lobes, and by its rotund seeds with shallow pits in the centre and radiating grooves at the edges.

3. *ADENIA CARDIOPHYLLA*, Engl. in Jahrb. XIV, 376. Rather stout, glabrous. *Stems* almost terete. *Leaves* membranous, remote, broadly ovate, rotund-ovate, sometimes almost sub-reniform, the base deeply cordate, the auricles rounded; the apex with a short triangular point; both surfaces smooth; the lower with numerous distinct reticulations; main-nerves about 9, radiating from the base; the secondary nerves sub-horizontal, numerous; length 5 to 9 in.; breadth 3·5 to 7·5 in.; petiole 2 to 4·5 in. long, not thickened at the base but with 2 sessile glands at the apex. *Peduncles* 4 to 6 in. long, longer than the petioles, with several widely-spreading cymose branches and usually one tendril. MALE FLOWER narrowly ovoid, ·2 in. long. *Calyx* leathery, spotted inside, the mouth with blunt short teeth. *Petals* thin, broadly oblong-lanceolate, sub-acute, spotted, their apices level with those of the teeth of the calyx, their bases inserted about the middle of the calyx-tube. *Glands* short, oblong-cuneiform. *Anthers* linear-ovate, acute, the filaments united into a tube inserted into the fundus of the calyx. FEMALE FLOWER twice as

long as the male, tubular. *Calyx* as in the male, the teeth recurved. *Petals* as in the male, their apices entire or minutely serrulate. *Ovary* ovoid, on a short gynophore, the stigma peltate 3-lobed. *Fruit* broadly fusiform, 2 to 2·5 in. long and 1 in. in diam. at the middle, dirty-yellowish when dry. *Seeds* compressed, sub-rotund, keeled, with prominent sharply edged deep pits in the centre and a row of elongate pits round the edges. *Modecca cardiophylla*, Mast. in Hook. fil. Fl. Br. Ind. II, 602. *Modecca cordifolia*, Kurz (not of Blume) in Journ. As. Soc. Beng., 1876, II, 132: Masters in Hook. fil. Fl. Br. Ind. II, 602. *M. heterophylla*, Kurz, (not of Blume) Andam. Report Append. A., 39.

ANDAMAN ISLANDS; very common. NICOBAR and GREAT COCO ISLANDS; *Prain*.—DISTRIB. Cambodia, Khasia Hills and Eastern Bengal, tropical Eastern Himalaya.

A species well marked by its deeply cordate leaves much reticulate on the lower surface, widely-spreading cymes and sub-rotund cancellate pitted seeds. Some confusion in nomenclature has arisen from the fact that Kurz, without having seen authentic specimens of Blume's two species *Modecca cordifolia* and *M. heterophylla* referred this plant to both of them. Dr. Masters perpetuated part of Kurz's mistake by accepting his view as to the identity of this Andaman and Nicobar plant with *M. cordifolia*, Blume, whereas the whole of the Andaman material (greatly increased in bulk since he wrote) really belongs to his own species *M. cardiophylla*. This view was first expressed by Dr. D. Prain, Superintendent of the Calcutta Garden in a note on one of the specimens in the Herbarium there.

4. *ADENIA POPULIFOLIA*, Engl. in Jahrb. XIV, 376, var. *PENTAMERA* King. A slender and often very extensive climber (often 150 feet) *Stems* slender, smooth, terete. *Leaves* thinly coriaceous, oblong-ovate, gradually narrowed to the acute or sub-acute apex, the base slightly cordate; both surfaces smooth, the nerves and reticulations little prominent when dry: main-nerves 5 to 7 pairs, curved, spreading, rather faint; length 3 to 5 in.; breadth 1·75 to 2·5 in.; petiole ·75 to 1·25 in., its apex bearing 2 large cup-shaped glands conjoined by their backs. *Peduncles* shorter than the leaves with 2 slender spreading branches and a single rather stout tendril. *Flowers* not numerous, on slender unequal pedicels, some of them ·75 in. long. MALE FLOWER ·2 in. long, narrowly fusiform; the calyx with 5 short oblong blunt lobes. *Petals* springing from the calyx-tube just below its lobes, and like them but narrower. *Anthers* 5, broadly linear, the connective slightly produced beyond the apex, shortly sagittate at the base; filaments joined into a tube and inserted into the fundus of the calyx: rudimentary ovary linear. FEMALE FLOWER shorter than the male (only ·15 in. long) and not so slender but with similar calyx-lobes and petals. *Ovary* oblong, crowned by three erect oblong rather large stigmas. *Fruit* double fusiform, deep red when ripe, 2·5 to 3 in. long and from ·75 to 1 in. in

diam. *Seeds* broadly oblong, compressed, foveolate with a row of short radiating grooves round the edges. *Modecca populifolia*, Blume Rumphia, 168 t. 50. *M. populifolia*, Bl.: Masters in Hook. fil. Fl. Br. Ind. II, 603 (*amongst imperfectly known species*).

MALACCA; Maingay (K.D.) 668. PERAK; Scortechini 1609; King's Collector, many Nos.

Blume describes and figures his *Modecca populifolia* plant as tetramerous and as this exactly agrees both with his text and figure, except in being pentamerous, I regard it as a variety. There are in Herb. Calcutta specimens from Perak without flower or fruit, of what appears to be a 3-lobed form of this.

5. *ADENIA ACUMINATA*, King. *Stems* slender, striate. *Leaves* subcoriaceous, ovate-oblong or rotund-ovate, the base usually narrowed but sometimes sub-cordate always bi-glandular; the apex shortly and abruptly acuminate; the secondary nerves and reticulations distinct on both surfaces when dry but especially on the lower; main-nerves 2 or sometimes 3 pairs, originating from the midrib near its base, all prominent: length 4 to 6 in.; breadth 2 to 4 in.; petiole .75 to 1.35 in. long. *Peduncles* usually nearly as long as the leaves but sometimes much shorter, bearing a few short many-flowered spreading branches at the apex and often a short tendril. MALE FLOWER narrowly ovoid, .25 to .3 in. long. *Calyx* leathery with 5 short ovate-lanceolate lobes. *Petals* thick, oblong, acute, springing from the calyx-tube above the middle. *Glands* small, lanceolate. *Anthers* linear, sub-acute, erect, the filaments short. FEMALE FLOWER larger than the males (.4 in. long), tubular, swollen in the lower third. *Calyx-lobes* very short, broad, blunt, incurved. *Petals* narrowly oblong, sub-acute, incurved. *Ovary* fusiform. *Fruit* fusiform, dull, reddish when dry, about 2 in. long and .75 in. in diam. at the middle. *Seeds* compressed, subrotund, boldly pitted in the centre and with a marginal row of radiating grooves on each side, slightly oblique and pointed at the base. *Modecca acuminata*, Blume Bijdr. 940; Miq. Fl. Ind. Bat. I, Pt. 1,702. *M. singaporeana*, Mast. in Hook. fil. Fl. Br. Ind. II, 601 (*in part*).

PERAK; Scortechini 254, 459, 629; Wray 498, 1745; Ridley 9462, 9632; King's Collector, many numbers. SELANGOR; Ridley 7288. MALACCA; Goodrich 1340.—DISTRIB.; Java, Sumatra, (Beccari P.S. 743).

6. *ADENIA SINGAPOREANA*, Engl. in Jahrb. XIV, 376. *Stems* slender, striate. *Leaves* subcoriaceous, oblong to ovate-oblong, cuneate and bi-glandular at the base, the apex sub-acute or shortly and bluntly acuminate; both surfaces smooth, opaque, the lower very pale, the secondary nerves and reticulations very indistinct on both; main-nerves 3 pairs, the lower two pairs bold and ascending, the upper pair less bold and spreading; length 3.5 to 4.5 in.; breadth 1.75 to 2.25 in.; petiole

·5 to 1·5 in. long. *Peduncles* about as long as the petiole, few-flowered. *Male flowers* (*vide* Masters) “·25 in. long, elongate, fusiform. *Calyx* leathery, shortly 5-lobed; lobes ovate, connivent (? always). *Petals* thick, leathery, oblong-acute, springing from the calyx-tube just beneath the throat. *Corona* none (?). *Glands* of the disc 5, small, oblong, at the base of the calyx-tube, opposite to its lobes. *Stamens* 5; anthers sub-sessile, erect, linear; connective long, thread-like. *Rudimentary ovary* fusiform. *Fruit* 2 in. long, glabrous, fusiform.” *Seeds* compressed, sub-ovoid, obliquely contracted to a short podosperm, the centre boldly tubercled, the edges with a row of broad grooves the tubercles between which on the extreme margin are bold and some of them black. *Passiflora singaporeana*, Wall. Cat. 1232. *Modecca singaporeana*, Masters in Hook. fil. Fl. Br. Ind. II, 601.

SINGAPORE; *Wallich*. JOHORE; *King*. MALACCA; *Maingay* (K.D.) 667.—DISTRIB. Java.

A species badly represented in collections and misunderstood. It is based on the plant collected by Wallich at Singapore and issued by him under his Cat. No. 1232 and named *Passiflora singaporeana*. With this agree absolutely a plant collected by Mr. Hullett and myself at Jaffaria (in Johore) also some specimens collected by Mr. H. O. Forbes in the Preanger in Java (*Herb. Forbes* 565). *Maingay* collected at Malacca six specimens of a *Modecca* all of which in *Herb. Kew.* are named *M. singaporeana*. In my opinion five of these belong to *M. acuminata*, Bl. I have seen no flowers of *M. singaporeana* and the account of them given above is copied verbatim from Masters. The leaves are very opaque and of a dull pale colour beneath, and the nerves are very faint. The fruit is slightly shorter than that of *M. acuminata*, Bl. of which species this is I fear little more than a form.

Order LII. BEGONIACEÆ.

Succulent herbs or undershrubs; stem often rhizomatous or tuberous. *Leaves* alternate (sometimes falsely whorled), more or less unequal-sided, entire, toothed or lobed; stipules 2, free, frequently deciduous. *Peduncles* axillary, dichotomously cymose, the branches and bracts at their divisions generally opposite. *Flowers* white rose or yellow, showy, sometimes small, monœcious. MALE: perianth (of the only Indian genus) of 2 outer valvate opposite sepaloïd segments, and 2-0 inner smaller segments; stamens indefinite often very many, free or monadelphous, anthers narrowly obovoid. FEMALE: perianth (of the only Indian genus) of 5-2 segments. *Ovary* inferior (in *Hillebrandia* half-superior), 2-3-4-celled; placentas vertical, axile (at the time of æstivation), divided or simple; styles 2-4, free or combined at the base, stigmas branched or tortuous; ovules very many. *Fruit* capsular, more rarely succulent, often winged, variously dehiscing or irregularly breaking up. *Seeds* very many, minute, globose or narrow-cylindric, testa

reticulated: albumen very scanty or 0.—DISTRIB. Species 400 (of which 398 belong to the genus *Begonia*), in all tropical moist countries; not yet met with in Australia.

1. BEGONIA, Linn.

Characters of the Order.

GROUP I. Capsule 3-celled, with 3 nearly equal narrow vertically oblong wings, dehiscing by 2 oblong valves on each face between the wings :—

Small acaulescent herbs, only a few inches in height :
leaves rotund-ovate slightly oblique 1. *B. Forbesii*.

Herbs with stems 2 or 3 feet high; leaves obliquely ovate-oblong or ovate-lanceolate, the base cordate and very unequal-sided :—

Male flowers '2 to '3 in. across 2. *B. isoptera*.

Male flowers 1'5 in. across 3. *B. isopteroidea*.

GROUP II. Capsule 2-celled, triquetrous, with 3 short unequal wings, dehiscing irregularly by the breaking up of the fragile faces between the wings; anthers obovoid, often emarginate at the apex :—

Cauliscent; rootstock tuberous :—

Upper surfaces of leaves with numerous adpressed white stellate hairs; bracts of inflorescence '05 to '1 in. long, densely adpressed-pubescent; male flowers '2 to '25 in. in diam.; capsules about 3 in. broad 4. *B. sinuata*.

Upper surfaces of leaves scantily adpressed hairy; bracts '35 to '5 in. long, glabrous; male flowers '5 in. and capsules '6 in. across 5. *B. andamensis*.

Leaves glabrous 6. *B. debilis*.

Acaulescent; rhizome creeping :—

Leaves rather thick (when dry), rotund-reniform, deeply cordate the basal lobes overlapping, the nerves beneath and the petioles rusty-tomentose 7. *B. thaipingensis*.

Leaves very thin (when dry), obliquely ovate-reniform, quite glabrous except for a few sparse hairs on the under surface of the nerves; petioles glabrous 8. *B. guttata*.

GROUP III. Capsule 2-celled, triquetrous with 3 wings one of which is much elongated transversely so as greatly to exceed the other two, dehiscing by the rupture of the stout membranous faces between the wings :—

Anthers cuneiform-oblong; leaves peltate 9. *B. Hasskarlii*.

Anthers linear-oblong or linear; leaves not peltate :—

Leaves not at all or very little oblique even at the base, not cordate; petioles very long :—

Leaves with coarse hairs on both surfaces :—

Leaves narrowly lanceolate 10. *B. Scortechinii*.

Leaves ovate-lanceolate 11. *B. Kunstleriana*.

Leaves glabrous :—

Leaves broadly elliptic-ovate, equal-sided at the base 12. *B. Herveyana*.

Leaves ovate-lanceolate, unequal-sided especially at the base ... 13. *B. perakensis*.

Leaves very oblique, ovate to reniform, obliquely cordate at the base :—

Leaves glabrous even on the nerves :—

Male flowers less than 1 in. across ... 14. *B. paupercula*.

Male flowers about 1·5 in. across ... 15. *B. venusta*.

Leaves glabrous, but the nerves hairy ; male flower 2 in. across ... 16. *B. megapteroidea*.

Leaves with a few coarse compressed rusty-pubescent hairs on both surfaces ; nerves beneath, petioles and also peduncles rusty-pubescent ; male flowers ½ in. across ... 17. *B. Maxwelliana*.

Upper surfaces of leaves papillose and bearing coarse hairs :—

Acaulescent ; petiole much longer than the lamina 18. *B. praeclara*.

Stems 3 feet high ; petiole shorter than the blade 19. *B. Lowiana*.

1. *BEGONIA FORBESII*, King n. sp. A small plant a few inches high with densely rusty-villose rhizome. *Leaves* rotund-ovate shortly apiculate, sometimes blunt, the base slightly cordate, the edges subentire or remotely denticulate ; upper surface glabrous : the lower with numerous white scales and a few coarse hairs on the nerves near their bases : main-nerves 9, radiating from the base, inconspicuous ; length 1·25 to 2·25 in. ; breadth 1 to 2 in. ; petiole 1·5 to 3 in. ; stipules lanceolate, villous externally, ½ in. long. *Peduncles* as long as or longer than the leaves, slender, glabrous, bearing a solitary flower at the apex, or 2-branched and bearing 2 to 5 flowers ; bracts absent on the lower part of the peduncle, in pairs in its upper part, small, obovate-oblong. *Flowers* pink, their pedicels red. *MALE* ; *sepals* 2, oblong, blunt, ½ in. long ; *petals* 2, similar but smaller ; *stamens* numerous ; *anthers* obovate, with emarginate apices, filaments short. *FEMALES* ; *perianth* of 4 unequal pieces, the outermost rotund-ovate : the inner oblong. *Styles* 3, thick, the stigmas large, flattened, rotund. *Capsule* 3-celled, opening on each face ; the wings subequal, spreading, triangular, blunt.

PERAK ; Wray 2476.—*DISTRIB.* Sumatra, *Forbes* 2666.

2. *BEGONIA ISOPTERA*, Dry. in Smith's Ic. 43. Caulescent : three feet high, nearly glabrous ; stem and branches slender. *Leaves* obliquely ovate-oblong or ovate-lanceolate, shortly acuminate, the base cordate, the sides very unequal ; edges remotely and usually coarsely dentate ; upper surface of leaves quite glabrous, the lower minutely scaly ; main-nerves mostly radiating from the base, branched, prominent ; length 3·5 to 6 in. ; breadth 1·5 to 3 in. ; petioles slender, varying from ½ to

2.25 in. in length: *stipules* lanceolate or oblong, .75 in. long. *Inflorescence* leaf-opposed, shorter than the leaves, slender; the female flowers near its base, the male on short branches on its upper half. MALES .2 to .3 in. across; *sepals* 2, rotund; *petals* 0; *stamens* numerous, broadly oblong or obovate, minutely apiculate; filaments short. FEMALE *perianth*-segments 5. *Styles* three, bifid, the arms twisted. *Capsule* 3-celled, about .8 in. long and equally broad, dehiscent by two slits on each face, the three wings equal, narrow, oblong, .25 in. wide. Dry. in Trans. Linn. Soc. I, 160. *B. repanda*, Bl. Enum. Pl. Jav. I, 97. *Diploclinium repandum*, Klo. Begon. 72. *Begonia Wrayi*, Hems. in Journ. Bot. for 1887, 203.

PERAK; *Scortechini* and *King's Collector*, many numbers. MALACCA; *Hervey*. SELANGOR; *Ridley* 8589. PAHANG; *Ridley* 2246. NEGRI SEMBALAN; *Ridley* 10028. PENANG; *Curtis* 7094.—DISTRIB. Sumatra, Java.

B. bombycina, Bl. (Enum. Pl. Jav. 97) is possibly identical with this; it has been reduced here by De Candolle and part of it is no doubt so reducible. Under *B. bombycina* however have been distributed specimens of an allied species with larger flowers in short spreading cymes. Which of the two plants Blume intended as his *B. bombycina*, it is impossible from his short description and in the absence of authentic specimens to determine.

3. *BEGONIA ISOPTEROIDEA*, King n. sp. Caulescent, 3 feet high, glabrous. *Leaves* thin, very obliquely ovate-lanceolate acuminate; the base acute on one side of the petiole but with a broad round auricle on the other, the edges remotely lobulate-dentate; lower surface with very minute white scales; main-nerves 7, radiating from the base, rather prominent beneath; length 3.5 to 4.5 in.; breadth 1.2 to 1.5 in.; petioles unequal, 2 to 3.5 in. long. *Stipules* broadly lanceolate, acute, .5 to .75 in. long. *Peduncles* slender, axillary, about an inch long and bearing about two flowers on long slender pedicels and one sub-sessile. *Flowers* pink, large. MALES; *sepals* 2, rotund-oblong, blunt, .75 in. long; *petals* 2 similar but only .5 in. long; *stamens* inserted on an elongate anthophore, the anthers quadrate, 2-grooved, truncate, only about half as long as the slender filaments. FEMALES nearly as large as the males; *style* short, thick, divided into 3 slender, bifid spiral spreading branches. *Capsules* about .75 in. in length and breadth, 3-celled, its wings narrow oblong, thin, membranous, the posterior narrower than the lateral.

PERAK; on Gunong Brumban, elevation 5,000 feet; *Wray* 1548.

A species in leaves capsules and habit resembling *B. isoptera*, but with much larger flowers.

4. *BEGONIA SINUATA*, Wall. Cat. 3680. Shortly caulescent (from 2.5 to 12 inches high) the rootstock tuberos. *Leaves* either broadly

reniform and blunt, or sometimes with a short broad abrupt apiculus, the basal sinus deep and the edges wavy and minutely denticulate or crenate; or reniform-cordate, gradually tapered to the sub-acute apex, the margins slightly lobulate-dentate, the lobes denticulate, the basal sinus small: length of the reniform over 4 to 6 in.; breadth 5 to 8 in., of the ovate-reniform 1·5 to 3 in.; breadth 1 to 3 in.; petioles of the radical leaves 1 to 3 in.; of the cauline ·5 to 2·5 in.; both surfaces with numerous adpressed white stellate hairs, the lower with small oblong white scales also; main-nerves 7 to 11, radiating from the base, prominent on the lower surface; petioles unequal, ·5 to 3 in. long, pubescent. *Stipules* small, oblong-lanceolate, slightly oblique, blunt, glabrous. *Inflorescence* 3 to 8 inches long, sparsely stellate-puberulous; the peduncle very slender; branches few, short, filiform, few-flowered; bracts minute (·05 to ·1 in. long) bluntly lanceolate, rather densely adpressed-pubescent externally, the upper in whorls of three. *Flowers* small, pink, glabrous. MALES about ·2 to ·25 in. in diam.: *sepals* 2, roundish; *petals* 2, narrower, obovate; *stamens* about 20, monadelphous; anthers obovoid, connective not produced. FEMALE *perianth-segments* 5, the inner gradually smaller. *Styles* 2, combined for half their length, *stigmas* lunate. *Capsule* about ·3 in. broad and slightly longer, the posterior wing the largest. *Seeds* ovoid, shining, brown, deeply pitted. A. DC. Prod. XV, Pt. I, 354; Kurz in Journ. As. Soc. Beng., 1877, Pt. II, 108; Clarke in Hook. fil. Fl. Br. Ind. II, 650. *Diploclinium biloculare*, Wight Ic. 1814. *Begonia guttata*, *elongata* et *subrotunda*, Wall. Cat. 3671 B (not A), 6291, 6293.

PENANG; Wallich; Phillips; King's Collector 2269, 4860; Curtis 390, 481, 3098; Ridley 9229. MALACCA; Maingay (K.D.) 674. PERAK; King's Collector 4971.—DISTRIB. BURMA; Griffith, Parish.

5. *BEGONIA ANDAMENSIS*, Parish ex Clarke in Hook. fil. Fl. Br. Ind. II, 650. Like the reniform-leaved form of *B. sinuata*, but the hairs on the surfaces of the leaves scanty: the inflorescence usually longer and its peduncle and branches much stouter; the bracts glabrous, longer (·35 to ·5 in.) and blunter and the male flowers (·5 in. across) and capsules (·6 in. across) longer and more numerous than those of *B. sinuata*.

ANDAMAN ISLANDS; Parish; King's Collector.—DISTRIB. Burma.

This ought probably to be regarded as a variety of *B. sinuata*. Actual specimens of the two look more different than written descriptions lead one to suppose; I therefore retain this as a species.

6. *BEGONIA DEBILIS*, King n. sp. A slender weak herb, about 6 to 8 inches high, caulescent. *Leaves* thin, narrowly reniform, blunt or sub-acute; the base unequal, rounded at both sides but one auriculate and

much longer; edges sub-entire or slightly remotely and obscurely crenate; breadth 1.5 to 3 in.; length (from base of largest lobe to apex) 3.5 to 7 in.; upper surface glabrous, the lower minutely scaly; main-nerves 7, radiating from the base, some of them branching, rather prominent below; petioles 1 to 3 in. long. *Inflorescence* axillary or terminal, slender, longer than the leaves, with a few lax filiform dichotomous spreading few-flowered branches, bracts in pairs, ovate-lanceolate, .1 to .15 in. long. *Flowers* pure white, the stamens yellow. *MALE* .35 in. across; *sepals* 2, oblong-ovate, blunt: *petals* 2, similar but smaller; *stamens* in a globular mass; anthers obovate, short with broad emarginate inappendiculate apices. *FEMALE perianth* of 5 unequal obliquely oblong pieces; *styles* united into a short column, above divided into numerous crowded awns. *Capsule* .75 in. broad (to the end of the wings), and .4 in. from base to apex, glabrous, 2-celled: the 2 lateral wings triangular, acute, the posterior wing oblong, tapering a little to the blunt apex, more than twice as long as the lateral.

PERAK; *King's Collector* 8289.

A species allied to *B. varians*, A. DC., but with more entire leaves.

7. *BEGONIA THAIPINGENSIS*, King n. sp. *Rhizome* long, creeping, rooting at intervals, wire-like, rusty-villous. *Leaves* rotund-reniform, the edges minutely and rather remotely dentate, the basal sinus mostly obliterated by the overlapping of the auricles; both surfaces scaly the lower more distinctly so and rusty tomentose on the 6 or 7 radiating sub-prominent nerves; length 1.25 to 2 in.; breadth 1.5 to 2.25 in.; petioles unequal, 1 to 4 in. long, densely rusty-tomentose. *Peduncles* 4 to 9 in. long, slender, sparsely rusty-villous, bearing one or two remote pairs of small lanceolate bracts and near the apex 3 to 5 slenderly pedicellate pink flowers on slender branches. *MALE* flowers; *sepals* 2, sub-rotund, .15 in. long; *petals* 2, smaller, oblong; *stamens* numerous; *anthers* obovate, the apex blunt and emarginate, the filaments short. *FEMALE perianth* of 5 unequal pieces, the largest most external: *style* short, thick, with 2 stout arms and short thick twisted stigmas. *Capsule* 2-celled, .5 in. broad (to the ends of the wings); all the wings triangular, sub-equal.

PERAK; *Scortechini* 1479; *Wray* 1774; *King's Collector* 2523, 8511.

A species allied to *B. sinuata*, Wall., but differing by the creeping rhizome, non-apiculate leaves, rusty-tomentose petioles and peduncles.

8. *BEGONIA GUTTATA*, Wall. Cat. 3671 A. *Stem* succulent, short, weak, bearing about two thin obliquely ovate-reniform glabrous nearly entire leaves with oblique cordate bases, and subacute apices; the nerves about 5, radiating from the base, prominent, sparsely hairy;

4 to 7 in. long and 2 to 4.5 in. broad; petioles 1.5 to 4 in. *Peduncles* varying in length from 1 to 2 in., slender, glabrous, bearing a few flowers near the apex. MALE flower; *sepals* 2, rotund; petals 2, narrowly oblong; *stamens* about 50, monadelphous; *anthers* obovoid. FEMALE; *perianth*-segments 5, gradually smaller inwards: *styles* 2, with two twisted branches. *Capsule* .4 in. long and .75 in. broad to the ends of the wings, the smaller wings very narrow; the posterior one broad, descending. A. DC., *Prod.* XV, Pt. I, 352; Clarke in Hook. fil. *Fl. Br. Ind.* II, 648.

PERAK; *Scortechini* 571. MALACCA; *Maingay* (Kew Distrib.) 675. PENANG; *Wallich*. SELANGOR; *Ridley* 7289.

9. *BEGONIA HASSKARLII*, Zoll. et Mor. Syst. Verz. Zoll. 31 (*not of Miq.*) All parts glabrous. *Stem* a creeping rhizome. *Leaves* rotund-ovate, shortly and abruptly caudate-acuminate, peltate, the edges wavy but entire; both surfaces glabrous, the upper pitted when dry, the lower with sub-rotund scales; main-nerves about ten, radiating from the insertion of the petiole, not very prominent; length 3.5 to 5.5 in.; breadth 2.25 to 3.75 in.; petiole attached to the leaf about .75 to 1.25 in. from its lower edge; *stipules* short, lanecolate. *Peduncle* usually longer than the leaves (often twice as long), about as thick as the petioles, bearing a few slender branches near the apex, ebracteate. *Flowers* small, white tipped with red. MALE .2 in. broad; *sepals* 2, reniform, the margins thick. *Stamens* numerous, cuneiform-oblong, their apices emarginate; filaments very short, free. FEMALE, *sepals* 2, with vertical veins, reniform; *style* short, thick, with 4 short branches; *stigmas* 4, much lobulate. *Capsule* 4-celled, .6 in. long, the lateral wings very narrow; the posterior broad slightly narrowed to the blunt apex, .5 in. long: *seeds* minute, ovoid, tapering to one end, brown, shining, pitted. *B. peltata*, Hassk. in Hœv. et De Vriese, *Tijdschr.* X (1843) 133. *Metscherlicia coriacea*, Klotzsch in Abh. Akad. Berl. (1855) 74; *Miq.* Fl. Ind. Bat. I, Pt. I, 696. *B. coriacea*, Hassk. Pl. Jav. Bar. 209; *B. hernandiaefolia*, Hook. (*not of others*) Bot. Mag. t. 4676.

PERAK; *Scortechini* 1607; *King's Collector* 4427, 8245; *Ridley* 9689. PAHANG; *Ridley* 2442.—DISTRIB. Java, *Zollinger* 1613.

This is one of three species to which the specific name *peltata* has been given. That name must however be reserved for the Brazilian species to which it was first applied by Otto & Dietr. (*Allg. Gartenz.* IX (1841) 58). The MSS. name *B. Hasskarliana* was given by Miquel to a species near *B. coespitosa* which he confused with *Zollinger's* No. 1613 (the type of the species above described), and this inaccuracy was perpetuated by Miquel on p. 1091 of his *Fl. Ind. Bat.* I, Pt. I, where he describes *Diploclinium Hasskarlianum*.

10. *BEGONIA SCORTECHINII*, King, n. sp. *Rhizome* creeping, short, scaly.

Leaves on very long glabrous petioles, narrowly lanceolate, attenuate to the acuminate apex, and to the rounded or acute nearly equal-sided base; the edges dentate-ciliate; both surfaces with numerous scattered coarse subulate spreading hairs compressed at their bases, the lower also minutely scaly; main-nerves pinnate, 3 or 4 pairs, then ascending; length 2.75 to 4 in.; breadth .5 to 1 in.; petioles 5 to 7 in. *Peduncles* axillary, somewhat shorter than the leaves, glabrous, bearing at the apex 2 few-flowered branches and a few rather long bracts. *Flowers* white, tinged with pink and green. MALE: *sepals* ovate, obtuse, .75 in. long; *petals* narrower but nearly as long. *Stamens* numerous, in a short column; anthers linear-oblong, the apical appendage obtuse; filaments short. *Female* with perianth-segments similar to the male (*vide* Scortechini) but 5. *Ovary* glabrous, 2-celled; *styles* free, 2 to 4-fid. *Capsule* .75 in. broad (including the wings) the lateral wings narrow, oblong, the posterior much larger (*vide* Scortechini).

PERAK; *Scortechini* 1845; *King's Collector* 7227.

I have seen no ripe capsules, and the above description of them is taken from Scortechini's field-note. The species is readily distinguishable by its very narrow equal-sided coarsely hairy leaves. A drawing of this, sent to Herb. Kew from Penang by Mr. C. Curtis, represents the leaf-petioles as not more than one inch long.

11. *BEGONIA KUNSTLERIANA*, King n. sp. *Rhizome* creeping, very scaly. *Leaves* ovate-lanceolate to lanceolate, often but not always unequal-sided, much acuminate; the base cuneate usually oblique; edges ciliate-serrate, the teeth slightly unequal; both surfaces with coarse spreading hairs with dilated flattened bases; the lower with minute white scales also; main-nerves about 3 pairs, pinnate, densely rufescent villous like the petioles; length 5 to 7.5 in.; breadth 1.75 to 2.5 in.; petiole from half as long to nearly as long as the blade. *Peduncles* longer than the petioles and more slender, glabrous, 2- to 4-flowered at the apex. *Flowers* large, white, tinged with red. MALE; *sepals* 2, elliptic, obtuse, 1 in. long and .5 in. broad, vertically veined; *petals* similar but not half so large. *Stamens* numerous, linear-oblong, bluntly apiculate. FEMALE *perianth* of 5 oblong blunt segments; *styles* 2, each with two short twisted branches. *Capsule* (to the end of the posterior wing) 1 in. broad: the lateral wings short, narrow; the posterior elongate not tapered to the apex, 2-celled. *Seeds* ellipsoid, shining, brown, pitted.

PERAK; *King's Collector* 7194; *Scortechini*; *Ridley* 9651.

This resembles *B. Scortechinii*, but has larger leaves and shorter petioles which are densely villous.

12. *BEGONIA HERVEYANA*, King n. sp. Glabrous except for a few

hairs on the nerves on the lower surface of the leaves: *rhizome* creeping, thin. *Leaves* broadly elliptic-ovate, shortly acuminate, slightly narrowed to the rounded almost equal-sided base; the edges slightly undulate, very indistinctly serrate; upper surface glabrous, lower very minutely scaly; nerves pinnate, about 6 pairs, ascending, branching; length 5 to 9 in.; breadth 3 to 4·5 in.; petioles much longer than the leaves, glabrous; *stipules* lanceolate, inconspicuous. *Peduncles* 5 to 10 in. long, slender, bearing near the apex 2 or 3 branches with few shortly pedicellate flowers. *MALE flowers*; *sepals* 2, ovate-subrotund; *petals* 2, much smaller, oblong, blunt; *stamens* numerous, arranged in a cone, linear, with a blunt apical appendage, the filaments short. *FEMALE perianth* of 5 subrotund pieces. *Capsule* 1 in. broad and about half as much from base to apex, imperfectly 4-celled: lateral wings narrow oblong; the posterior wing ovate, blunt, about 6·5 in. long.

MALACCA; *Hervey*; *Derry*.

This is a very distinct species resembling in the shape of its leaves no Asiatic *Begonia* that I have seen, except on unnamed species from Tonkin (No. 3763 of Herb. Balansa).

13. *BEGONIA PERAKENSIS*, King n. sp. *Rhizome* slender, creeping. *Leaves* ovate-lanceolate, slightly unequal-sided, acuminate; the base broad, rounded or very slightly emarginate or oblique, the edges obscurely and remotely dentate, or sub-entire; both surfaces glabrous, the lower minutely scaly; main-nerves pinnate, 4 or 5 pairs, ascending; length 3·5 to 5·5 in.; breadth 1·5 to 2·25 in.; petiole 2·5 to 5 in.; slender, glabrous. *Peduncles* usually longer than the leaves (at least when in fruit), 4-angled, glabrous, few-flowered. *Flowers* whitish tinged with pink, or pink. *MALE*; *sepals* rotund-ovate, 4 in. long. *Petals* 2, oblong and much smaller. *Stamens* numerous, linear with short blunt apical appendages and short filaments. *FEMALE perianth* of 5 (?) segments. *Capsule* (ripe) 1·2 in. broad (to end of posterior wing), and 5 in. from base to apex, 2-celled; the lateral wings oblong, narrow; the posterior oblong, blunt, slightly oblique, 3·5 in. broad; *seeds* small, ellipsoid, pitted, shining.

PERAK; *King's Collector* 10338, 10506, 10951.

Specimens of a species closely resembling this, but insufficient for accurate determination, have been collected in Selangor by Mr. Ridley (Herb. Ridley 8590).

14. *BEGONIA PAUPERCULA*, King n. sp. *Rhizome* creeping, acaulescent, everywhere glabrous. *Leaves* ovate, very unequal-sided and very oblique at the base, or ovate-lanceolate, slightly unequal-sided and little oblique at the base; the apex always acuminate, the edges slightly sinuate-lobed, obscurely dentate; both surfaces glabrous: main-nerves 5 to 7, radiating from the base, prominent below, midrib with a few

lateral nerves, length 3·5 to 5 in.; breadth 1·25 to 3·5 in.; petioles varying in length from 2·5 to 7 in., slender, 2- to 3-flowered. *Flowers* white, tinged with red. *MALES*; *sepals* 2, elliptic-oblong, ¼ in. long; *petals* 0. *Stamens* linear-oblong, shortly and bluntly apiculate: filaments short. *FEMALE*; the *perianth* of 5 very unequal lobes, the outermost larger than the sepals of the male. *Capsules* ½ in. long and 1 in. broad, 2-celled; the 2 lateral wings sub-elliptic, oblique, ⅓ in. broad; the posterior wing oblong, blunt, ⅔ to ⅗ in long and ⅓ in. broad.

PERAK; *King's Collector* 5952.

This has leaves resembling those of *B. borneensis*, but the flowers are fewer and larger. Beccari's Sumatra specimens (P.S. 857), in fruit only, appear to belong to this species.

15. *BEGONIA VENUSTA*, King n. sp. *Rhizome* slender, creeping; whole plant glabrous. *Leaves* reniformly ovate, shortly acuminate, the basal sinus deep; the edges sub-entire or remotely and minutely denticulate; both surfaces smooth, shining: main-nerves 7, radiating from the base, slender; length 3 to 5·5 in.; breadth 2 to 3·5 in.; petioles unequal, slender, from 6 to 12 in. in length. *Peduncles* 3·5 to 6 in. long, bearing about 3 pedunculate pinkish-white flowers near the apex. *MALE*; *sepals* 2, ovate-rotund, blunt, ⅞ in. long. *Petals* 2, somewhat larger. *Stamens* narrowly oblong, with a large apiculus; filaments unequal, the inner ones long, the outer short. *FEMALES* smaller than the male, the *perianth* of 5 unequal broad blunt segments; *styles* very short, with numerous broad depressed lobules. *Capsule* ⅓ in. long and 1·15 in. broad (to the ends of the wings); lateral wings more than half as long as the posterior, broadly triangular, blunt; posterior wing oblong, blunt, ⅗ in. long.

PERAK; at an elevation of about 6,000 ft., *Wray* 1598.

The leaves are not unlike those of *B. pauperula* and *B. borneensis* but the flowers are large and handsome.

16. *BEGONIA MEGAPTEROIDEA*, King n. sp. *Rhizome* as thick as a swan-quill, creeping on rocks. *Leaves* broadly and very obliquely ovate, acuminate; both sides of the base rounded but very unequal, the sinus between them wide, the edges remotely and minutely dentate, upper surface glabrous; the lower also glabrous except the rusty-pubescent nerves which are also scaly near the base: main-nerves about 8, radiating from the base, the larger branched and all rather prominent; length (from apex of petiole to apex of blade) 4 to 5 in.; breadth 4 to 5 in.; petiole 12 to 16 in. long, glabrous. *Peduncles* from half as long to nearly as long as the leaves, glabrous, ebracteate below the flowers. *MALE* flowers: *sepals* rotund-ovate, very obtuse, 1 in. long and ⅔ to ⅗ in. broad; *petals* much smaller, elliptic: *stamens* numerous, in a conical

mass on a short thick anthophore; *anthers* oblong, bluntly apiculate, filaments varying in length (the inner the longest). FEMALE *perianth* of 5 unequal pieces: *styles* 2, rather long, combined at the base. *Capsule* not seen.

PERAK; collected at an elevation of 5,000 ft., Wray 1450, 1573.

Specimens of this plant are rather scanty. They resemble *B. megaptera*, but are not caulescent like that species. In the Calcutta Herbarium there is, under the name *Diploclinium tuberosum*, Miq., a specimen collected by Kurz in Western Java which apparently belongs to this species. There are also two plants from Sumatra collected by Forbes (Herb. Forbes 2333a and 2255) which appear to belong to this. The genus *Diploclinium* is inseparable from *Begonia* and the specific name *tuberosa* is pre-occupied in the latter by a species described by Lamack from the Moluccas which has a rounded tuberous root.

17. *BEGONIA MAXWELLIANA*, King n. sp. *Rhizome* as thick as a swan-quill, bearing many broadly lanceolate scales. *Leaves* broadly and obliquely ovate to ovate-rotund, more or less acuminate, the edges minutely ciliate-denticulate, the base very oblique, one side of it rounded the other rounded-auriculate, the sinus wide; both surfaces with a few coarse compressed rusty hairs, most numerous on the nerves near the base; the lower surface with minute white scales; main-nerves 7 to 9, radiating from the base, prominent; length 5 to 6 in.; breadth 4 to 7 in.; petioles 4 to 10 in. long, compressed (when dry) like the peduncles and like them rusty-pubescent. *Peduncles* unequal, those bearing only male flowers often shorter than the petioles; those bearing female and male, or females only often longer than the petioles; all ebracteate below the inflorescence, dichotomously branched and few-flowered at the apex; the bracts short, broad. MALE flowers densely clustered; *sepals* 2, oblong-ovate, blunt, 4 in. long, puberulous outside; *petals* 2, similar, but much smaller. *Stamens* numerous, without anthophore; *anthers* linear, bluntly apiculate, slightly shorter than the filaments. FEMALE *perianth* of 5 unequal pieces diminishing in size inwards; *styles* 2, short, much lobulate. *Capsule* 2-celled, 1.4 in. broad (to the ends of the wings) and .6 in. from base to apex; the 2 lateral wings sub-quadrate, obtuse; the posterior oblong, blunt, more than three times as long as the lateral.

PERAK; Maxwell's Hill, at elevation of 3,000 feet, Wray 119, 2199; *Scortechini* 1607, 1798; *King's Collector* 2038.—DISTRIB. Sumatra, *Forbes* 3119a.

The flowers of this are white tinged with pink and the leaves green, the nerves beneath being red. This resembles *B. megapteroidea*, King, but the flowers are smaller, and the leaves and inflorescence are not glabrous as in that species.

18. *BEGONIA PRECLARA*, King n. sp. *Rhizome* creeping, very scaly. *Leaves* obliquely ovate, acuminate, the base rounded on one side of the

petiole and on the other expanding into a broad rounded auricle, the edges minutely dentate, rarely with small lobes besides: upper surface with numerous conical papillæ each bearing a coarse curved hair flattened at the base; under surface with a few scattered flattened hairs especially on the nerves; main-nerves 7, radiating from the base, prominent beneath; length 3·5 to 5·5 in.; breadth 2·5 to 3·5 in.; petioles unequal 3 to 6 in. long, with a few flexuose hairs near the apex. *Peduncles* longer than the petioles, slender, glabrous, 1- to 3-flowered. *Flowers* on rather long slender pedicels, pink. MALES; *sepals* 2, narrowly oblong-ovate, obtuse, .8 in. long; *petals* 2, narrowly oblong, blunt, .5 in. long; *stamens* linear-oblong, apiculate, the filaments unequal the central the largest. FEMALE perianth unknown; *styles* 2, short, 2-branched, branches divided into many flat twisted lobes. *Capsule* .5 in. long and about 1·5 in. broad (to the ends of the wings); the lateral wings quadrate-ovate, obtuse, about .4 in. long; the posterior oblong, blunt, 1 in. long and .4 in. broad.

PERAK; at elevations of from 3,000 to 6,700 feet, *Wray* 318, 349, 427; *King's Collector* 8077.

The upper surface of the leaves is dark green, the nerves being coloured; the under surface is red of various tints and the flower-stalks are pale crimson.

19. *BEGONIA LOWIANA*, King n. sp. Caulescent; 3 feet high; stems and branches covered with coarse flexuose glandular hairs. *Leaves* mostly very obliquely reniform; but some of the cauline ovate and nearly equal-sided acute, the basal sinus deep, the edges with a few very shallow lobes closely and rather minutely dentate-serrate and shortly ciliate; both surfaces coarsely rusty-pubescent, the hairs flexuose compressed and with dilated bases, the lower also with small white scales; main-nerves about 9, radiating from the base, prominent and densely villous; length 3 to 4·5 in.; breadth 4 to 7 in.; petioles unequal, stout, villous like the under surface of the ribs and midrib, from .4 in. long in the upper leaves, to 4 in. long in the lower. *Cymes* few-flowered, leaf-opposed and terminal, shorter than the leaves when in flower, much larger when in fruit; bracts ovate-lanceolate, opposite, ciliate. *Flowers* pink or white, pedicellate. MALE about .75 in. across; *sepals* 2, ovate-oblong, sub-acute, .5 in. long; *petals* 2, oblong, much smaller. *Stamens* numerous, oblong, blunt, without apical appendages; filaments short. FEMALE, the perianth of 5 pieces decreasing in size inwards; *styles* 2, deeply bifid and spiral. *Capsules* .65 in. long and twice as broad to the end of the wings; lateral wings very narrow (about .15 in. broad), the posterior oblique, broadly ovate, blunt, .9 in. long and .8 in. broad.

PERAK; at an elevation of 7,000 feet on Gunong Brumber Pahang, Wray 1567; also on Gunong Batu Puleh, Wray 316.

This resembles the Indian species *B. Thomsonii*, DC., but differs in being caulescent, in having shorter hairs on leaves and petioles, and in the posterior wing of the capsule being much larger. I have named the species after Sir Hugh Low, late British resident at Malacca, to commemorate his many services towards the botanical exploration of the Province of Perak.

Order LIV. FICOIDEÆ.

Herbs. *Leaves* simple, often fleshy, usually opposite or whorled; stipules 0 or scarious. *Flowers* usually in cymes or clusters, rarely solitary, regular, hermaphrodite rarely polygamous. *Calyx* of 4-5 segments, united into a tube or nearly distinct, free from the ovary in the Indian genera, often persistent. *Petals* usually wanting, when present small. *Stamens* perigynous or hypogynous, definite or indefinite; staminodes sometimes present. *Ovary* free (except in *Mesembryanthemum*), 2-5-celled, syncarpous (except in *Gisekia*); styles as many as the carpels: ovules numerous in each carpel and axile or solitary and basal. *Fruit* usually capsular, splitting dorsally or circumsciss, more rarely the carpels separate into cocci. *Seeds* many or 1 in each carpel, usually reniform, compressed; embryo curved or annular, surrounding the farinaceous albumen, radicle next the hilum.—DISTRIB. Species 450, chiefly African, a few are scattered through most tropical and subtropical regions.

Capsule with circumscissile dehiscence	...	...	1. SESUVIUM.
Capsule with dorsal dehiscence	...	...	2. MOLLUGO.

1. SESUVIUM, Linn.

Succulent branching herbs. *Leaves* opposite, fleshy; stipules 0. *Flowers* axillary, sessile or peduncled, solitary, rarely in cymes. *Calyx-tube* short; lobes 5, triangular-lanceolate, persistent, often coloured. *Petals* 0. *Stamens* many or 5, inserted round the summit of the calyx-tube. *Ovary* free, 3-5-celled; styles 3-5; ovules many, axile. *Capsule* ovate-oblong, membranous, 3-5-celled, circumsciss. *Seeds* many in each cell, reniform; embryo annular.—DISTRIB. Species 4, littoral in warm climates.

SESUVIUM PORTULACASTRUM, Linn. Syst. ed. 10, 1058. Creeping and rooting in the sand, glabrous. *Leaves* linear-spathulate almost cylindric, sometimes sub-ovate: gradually narrowed into a short petiole with dilated scariously margined base. *Flowers* solitary, axillary, their pedicels .25 in. long. *Calyx* rose-coloured inside. *Stamens* 15 to 40, free or almost free. *Styles* 3 to 5. *Capsule* .2 in. across. *Seeds* black, shining, smooth, not numerous. Roxb. Fl. Ind. II, 509; Dalz. & Gibs. Bomb.

Fl. 15; Kurz in Journ. As. Soc. Beng. 1877, Pt. II, 110; Clarke in Hook. fil. Fl. Br. Ind. II, 659. *S. repens*, Willd. Enum. p. 511; DC. Prodr. III, 453; W. & A. Prodr. Fl. Pen. Ind. 361; Wight in Hook. Comp. Bot. Mag. II, 71, t. 23; Miq. Fl. Ind. Bat. I, Pt. I, 1060. *Psammanthe marina*, Hance in Walp. Ann. II, 660. *Crithmum indicum*, Rumph. Herb. Amb. VI, t. 72, fig. 1.

On the sea shores in the Andamans and the other Provinces.—
DISTRIB. B. India, Malayan Archipelago.

2. MOLLUGO, Linn.

Herbs, branched, often dichotomous. *Leaves* often falsely whorled, or alternate, or all radical, from linear to obovate, entire; stipules fugacious. *Flowers* axillary, sessile or pedicelled, clustered or in panicles or racemes, small, greenish; bracts inconspicuous. *Sepals* 5, persistent. *Petals* 0; staminodes 0 or small in the same species. *Stamens* 5-3, rarely many. *Ovary* free, globose or ellipsoid, 3-5-celled; styles 3-5, linear or very small; ovules many, axile. *Capsule* membranous, sheathed by the sepals, 3-5-celled, dehiscing dorsally. *Seeds* several in each cell, rarely 1, reniform, appendaged or not at the hilum; embryo annular.—DISTRIB. Species 12, tropical and subtropical.

MOLLUGO PENTAPHYLLA, Linn. Spec. Plantar. ed. 1 (1753), 89. A few inches high, glabrous; stems much-branched, leafy, varying from oblong-lanceolate, lanceolate-acute to obovate-obtuse, contracted at the base, subsessile or sessile, from less than .5 in. to more than 2 in. in length. *Panicles* compound, terminal, many times longer than the leaves. *Sepals* elliptic or rotund, blunt. *Stamens* 3 to 5, short; filaments rather broad, compressed. *Capsule* globose, as long as the sepals, thin-walled, many seeded. *Seeds* dark-brown, tubercled; embryo curved. W. & A. Prodr. 44; Dalz. & Gibs. Bomb. Fl. 16; Kurz in Journ. As. Soc. 1877, Part II, 111. *M. triphylla*, Lour. Fl. Cochinc. 79; DC. Prodr. I, 392; Roxb. Hort. Beng. 9, Fl. Ind. I, 360; Wall. Cat. 651; W. & A. Prodr. 44. *M. Linkii*, Seringe in DC. l.c. *M. stricta*, Linn. Sp. Pl. ed. II, 131; DC. Prodr. I, 391; Roxb. l.c.; Wall. Cat. 650; W. & A. Prodr. 44; Dalz. & Gibs. l.c.; Clarke in Hook. fil. Fl. Br. Ind. II, 663: *Pharnaceum strictum*, *triphyllum* and *pentaphyllum*, Spreng. Syst. I, 949.—Rheede Hort. Mal. x. t. 26.

In all the Provinces, near cultivated places.—DISTRIB. General throughout S. E. Asia.

Order LV. UMBELLIFERÆ.

Herbs (rarely in non-Indian species shrubs or trees). *Leaves* alternate, usually divided or dissected, sometimes simple, petiole generally

sheathing at the base; stipules 0. *Flowers* hermaphrodite or polygamous, in compound umbels (simple in *Hydrocotyle* and *Bupleurum*), exterior of the umbel sometimes radiant; umbels with involucriform bracts at the base of the general one and bracteoles at the base of the partial ones (umbellules). *Calyx-tube* adnate to the ovary, limb 0 or 5-toothed. *Petals* 5, epigynous, often unequal, and with a median fold on the face, plane or emarginate or 2-lobed with the apex inflexed; imbricated in bud, in *Hydrocotyle* sometimes valvate. *Stamens* 5, epigynous. *Ovary* inferior, 2-celled, disc 2-lobed; styles 2, stigmas capitate; ovules 1 in each cell, pendulous. *Fruit* of 2 indehiscent dorsally or laterally compressed carpels, separated by a commissure; carpels each attached to and often pendulous from a slender often forked axis (carpophore), with 5 primary ridges (1 dorsal, 2 marginal and 2 intermediate) and often 4 secondary ones intercalated between these; pericarp often traversed by oil-canals (vittæ). *Seed* 1 in each carpel, pendulous, albumen cartilaginous; embryo small, next the hilum, radicle superior.—*DISTRIB.* Species about 1,500, mainly in Europe, North Africa, West Central and North Asia; a few are North American, tropical, and natives of the Southern Hemisphere.

Creeping unarmed herbs	...	...	...	1. HYDROCOTYLE.
Erect spinous herbs	...	...	...	2. ERYNGIUM.

1. HYDROCOTYLE, Linn.

Prostrate herbs, rooting at the nodes. *Leaves* (in the Indian species) cordate or hastate, not peltate, round or 5-9-gonal, subentire or palmately lobed, palmate-nerved, long-petioled; stipules small, scarious. *Umbels* (in the Indian species) simple, small; bracts small or 0; flowers white, sometimes unisexual. *Calyx-teeth* 0 or minute. *Petals* entire, valvate or imbricate. *Fruit* laterally compressed, commissure narrow; carpels laterally compressed or sub-pentagonal; lateral primary ridges concealed within the commissure, or distant therefrom and prominent; vittæ 0, or most slender, obscure; carpophore 0. *Seed* laterally compressed.—*DISTRIB.* Species 70; in wet places in tropical and temperate regions, more numerous in the Southern Hemisphere.

Petals acute, valvate; fruit with no secondary ridges; pericarp thin	...	...	...	1. <i>H. javanica</i> .
Petals obtuse, imbricate; fruit with prominent secondary ridges, the pericarp thickened	...	...	...	2. <i>H. asiatica</i> .

1. *HYDROCOTYLE JAVANICA*, Thunb. Dissert. Hydrocot. n. 17, t. 2: ed. Pers. II, 415, t. 2. *Leaves* reniform, 5-6-lobed, the lobes irregularly crenate, sometimes sub-entire, 1 to 3 in. broad. *Peduncles* long, slender, often clustered. *Petals* acute, valvate. *Fruit* much compressed, the

secondary ridges absent; pericarp thin, blackish. DC. Prodr. IV. 67; Miq. Fl. Ind. Bat. I. Pt. I, 734; Kurz in Journ. As. Soc. 1877, Pt. II. 113; Clarke in Hook fil. Fl. Br. Ind. II, 667. *H. hispida*, Don Prodr. 183. *H. nepalensis*, Hook. Exot. Fl. t. 30; Wall. Cat. 561; DC. l.c. 65; Miq. l.c. 735. *H. zeylanica*, DC. l.c. 67; W. & A. Prodr. 366; Miq. l.c. 734. *H. hirsuta*, Blume Bijl. 884. *H. polycephala*, W. & A. Prodr. 366; Wight. Ic. t. 1003. *H. hirta*, R. Br. var. *acutiloba*, F. Muell.; Benth. Fl. Austral. III. 340. *H. Heyneana*, Wall. Cat. 563. *H. strigosa*, Ham. in Wall. Cat. 7219.

PERAK; and probably in all the other provinces except the Andaman and Nicobar Islands.—DISTRIB. The Malay Archipelago, Australia, Philippines.

2. *HYDROCOTYLE ASIATICA*, Linn. Sp. Pl. 234. *Leaves* rotund-reniform, the margins not lobed but uniformly crenate or dentate, sometimes sub-entire, .5 to 2 in. broad. *Peduncles* short, often 2 or 3 together. *Petals* obtuse, imbricate. *Fruit* compressed, secondary ridges prominent, pericarp thickened. Roxb. Hort. Beng. 31: Fl. Ind. II, 88; Wall. Cat. 560; DC. Prodr. IV, 62; W. & A. Prodr. 366; Wight Ic. t. 565; Dalz. & Gibs. Bomb. Fl. 105; Kurz in Journ. As. Soc. 1877, Pt. II, 113; Clarke in Hook. fil. Fl. Br. Ind. II, 669. *H. Wightiana*, Wall. Cat. 7220. *H. lurida*, Hance in Walp. Ann. II, 690.—Rheede Hort. Mal. X. t. 46.

ANDAMAN ISLANDS; PERAK.—DISTRIB. Tropical and sub-tropical regions.

2. *ERYNGIUM*, Linn.

Spinescent, glabrous, erect, perennial *herbs* (the Indian species). *Leaves* spinous-toothed, entire lobed or dissected. *Flowers* in simple heads, each bracteolate; bracts whorled, spinulose (in Indian species). *Calyx-tube* covered with ascending hyaline scales; teeth rigid, acute. *Petals* whitish, narrow, erect, emarginate, scarcely imbricate. *Fruit* ellipsoid, nearly cylindric: carpels dorsally subcompressed, subconcave on the inner face; primary ridges obtuse not prominent, secondary 0; vittæ in the primary ridges inconspicuous or 0, with some very slender scattered in the endocarp: carpophore 0. *Seed* semi-terete, dorsally subcompressed, subconcave on the inner face.—DISTRIB. Species 100, temperate and tropical; plentiful in Western Asia.

ERYNGIUM FETIDUM, Linn. Sp. Pl. 232, (*in part.*) Erect, unbranched below, dichotomously branched above. *Leaves* radical, oblong-oblancheolate, coarsely serrate, glabrous, 4 to 9 in. long and not more than 1 in. broad. *Bracts* of inflorescence all spinous-toothed; the lower deeply lobed; the upper smaller (about 1 in. long), lanceolate, not

lobed, whorled. *Flowers* in dense cylindric spikes, less than 1 in. long DC. Prodr. IV, 94.

SINGAPORE: *King's Collector* 333.

Order LVII. CORNACEÆ.

Shrubs or trees. *Leaves* opposite or alternate, more or less coriaceous, usually petiolate, entire, rarely serrate or lobed, often unequal at the base, exstipulate. *Flowers* usually small, regular, hermaphrodite or unisexual, in axillary or terminal cymes, panicles or capitules. *Calyx-tube* adherent to the ovary; the limb truncate or 4-5-toothed or lobed, valvate or imbricate, persistent at the apex of the fruit. *Petals* 4-5, sometimes as many as 20, or none, valvate or imbricate. *Stamens* inserted with the petals and equal to them in number, rarely 2 or 3 times as many. *Ovary* inferior, 1-4-celled, crowned by a large fleshy or rarely small disc. *Style* single, long or short; stigma truncate, capitate or pyramidal, sometimes lobed. *Ovules* solitary in each cell (rarely 2), pendulous from the apex. *Fruit* baccate, (the pulp often scanty), usually 1-celled, sometimes as many as 4-celled. *Seed* oblong, pendulous, with copious fleshy albumen; embryo axile minute or often large with flat leafy cotyledons.—*DISTRIB.* Species about 90, widely scattered but most abundant in the temperate regions of the Northern Hemisphere.

Flowers hermaphrodite :—

Petals not larger than the lobes of the calyx; anthers

short, ovate and cordate; style short ... 1. MASTIXIA.

Petals much longer than the lobes of the calyx; anthers

long, linear; style elongate ... 2. ALANGIUM.

Flowers unisexual ... 3. NYSSA.

1. MASTIXIA, Blume.

Trees, young parts more or less pubescent. *Leaves* alternate or opposite, petioled, entire. *Flowers* hermaphrodite, often 2-bracteolate, small, in terminal many-flowered cymose panicles; bracts small or lengthened, pedicels short or 0, jointed under the flower. *Calyx-tube* campanulate, pubescent or silky; limb 5-4-toothed. *Petals* 5-4, ovate, leathery, valvate, pubescent, silky. *Stamens* 5-4; anthers cordate-oblong. *Ovary* 1-celled; disc fleshy; style cylindric, simple; ovule 1, pendulous from one side of the cell very near its summit. *Drupe* ellipsoid or ovoid, crowned by the calyx-teeth or a scar; putamen grooved down one face; endocarp protruded inwards down one side. *Seed* ellipsoid; albumen fleshy; embryo small, radicle elongate, cotyledons thin, elliptic.—*DISTRIB.* Species 18; S. India and Malaya.

Leaves alternate; bracts of the inflorescence dimorphous 1. *M. bracteata*.

Leaves alternate or opposite:—

Bracts of the inflorescence all small, triangular, concave, puberulous, not in whorls ... 2. *M. Scortechinii*.

Bracts of inflorescence in whorls at the base of the flower-pedicels, broad ... 3. *M. gracilis*.

Leaves opposite:—

Flowers 5-merous ... 4. *M. Maingayi*.

Flowers 4-merous ... 5. *M. Clarkeana*.

1. MASTIXIA BRACTEATA, Clarke in Hook. fil. Fl. Br. Ind. II, 746.

A tree 40 or 50 feet high: young branches slender, glabrous. *Leaves* alternate, thinly coriaceous, olivaceous-green when dry, abruptly bluntly and shortly acuminate, the base cuneate; both surfaces glabrous, the lower faintly reticulate; main-nerves 5 or 6 pairs, ascending, curved, impressed on the upper but prominent on the lower surface: length 1·75 to 3 in.; breadth ·75 to 1·35 in.; petiole ·25 to ·5 in. *Cymes* terminal, ·75 to 1·5 in. long, branching, many-flowered, bracteate; the bracts of two sorts; those at the bases of the branches linear-oblong, blunt, 1-nerved, glabrous, longer than the flowers; those at the bases of the flowers much smaller, lanceolate, puberulous. *Flowers* a little over ·1 in. long. *Calyx* funnel-shaped, the tube adpressed-silky outside; the mouth expanded, glabrous, wavy but scarcely distinctly toothed, *Corolla* hemispheric in bud: *petals* adnate by their edges, broadly ovate, silky externally. *Anthers* 5, broadly ovate, cordate at the base; filaments short. *Disc* large, fleshy, 5-toothed, each tooth with an oblong depression in the middle. *Style* short, grooved. *Fruit* unknown.

MALACCA: *Maingay* (K.D.) 710. PERAK: *Kunstler* 6830.

2. MASTIXIA SCORTECHINII, King n. sp.

A small tree; young branches slender, angled, glabrous. *Leaves* coriaceous, elliptic-oblong or oblanceolate, much attenuate to the base, the apex shortly and bluntly acuminate; both surfaces glabrous, pale olivaceous when dry, the lower the palest; main-nerves 4 or 5 pairs, ascending, slender; length 1·75 to 2·5 in.; breadth ·85 to 1·25 in.; petiole ·25 to ·5 in. *Cymes* corymbose, terminal, several together, 1·25 to 1·75 in. long, puberulous; the branches short, angled; bracts at the bases of the branches and of the flowers similar, small, triangular, concave, puberulous. *Flowers* sessile; *calyx-tube* narrowly campanulate, the mouth with 5 distinct triangular teeth. *Corolla* depressed-globose in bud. *Petals* 5, puberulous outside, ovate, acute. *Stamens* 5: *anthers* broadly ovate, cordate at the base; filaments short. *Disc* fleshy, cushion-like, with 5 short lobes. *Ovary* 1-celled; *style* short, grooved, stigma peltate. *Fruit* unknown. *M. bracteata* Scortechini MSS. (not of Clarke).

PERAK: *Scortechini* 1971.

This much resembles a leaf specimen issued by Koorders and Valetton (No. 914) from Herb. Buitenzorg as *M. trichotoma*, Bl. I have not seen Blume's type of this species. But in his Bijdragen he describes its flowers as tetramerous. A Sumatra specimen collected by Beccari (P.S. 956) which has ripe fruit but no flowers probably belong to this. These fruits are narrowly oblong, tapering to each end, smooth, slightly over an inch in length and about .35 in. in diam. (when dry). *M. Scortechinii* much resembles *M. bracteata*, Clarke; but differs in having bold acute calyx-teeth, and only one kind of bracts on the inflorescence.

3. *MASTIXIA GRACILIS*, King n. sp. A small tree; young branches slender, angled, smooth, yellowish. *Leaves* thinly coriaceous, lanceolate, tapering much to the base and still more to the much acuminate apex; both surfaces pale olivaceous-green when dry, glabrous; the upper shining, the lower somewhat dull; main-nerves 8 to 14 pairs, ascending, very little curved, faint on both surfaces; length 2.25 to 4.5 in.; breadth .8 to 1.5 in.; petioles varying from .2 to .25 in. *Cymes* in threes, terminal, about a third or a fourth the length of the leaves, on short angled peduncles, the branches short and crowded at their apices, many-flowered, with a whorl of minute broad bracts at the base of flower pedicels. *Flowers* about .1 in. long, their pedicels about as long, ovoid. *Calyx* campanulate; the tube puberulous, slightly furrowed; the mouth wavy, indistinctly 5-toothed. *Petals* 5, oblong-ovate, adherent by their edges, concave, leathery. *Stamens* 5; *anthers* oblong, bifid; filaments short. *Disc* small. *Style* short, conical: stigma concave. *Fruit* unknown.

PERAK: at an elevation of about 5,000 feet; *Wray* 1528.

4. *MASTIXIA MAINGAYI*, Clarke in Hook. fil. Fl. Br. Ind. II, 746. A tall tree; young branches, petioles, under surfaces of leaves, branches and bracts of the inflorescence and the outer surfaces of the calyx and petals densely and softly rusty-tomentose. *Leaves* opposite, coriaceous, elliptic or elliptic-ovate, the apex shortly and abruptly acuminate, the base cuneate; upper surface glabrous, greenish when dry, the midrib and nerves impressed; the tomentum on the lower surface pale brown; main-nerves 6 to 8 pairs, ascending, curved, very prominent on the lower surface and connecting nerves transverse; length 4 to 6 in.; breadth 1.5 to 3 in.; petioles unequal, .75 to 1 in. *Cymes* branched, on peduncles 1.5 to 2 in. long, terminal, longer than the leaves; the bracts at the bases of the branches small, oblong. *Flowers* numerous, .15 in. long. *Calyx* campanulate, deeply 4-lobed; the lobes broadly ovate, obtuse. *Petals* 4, similar in shape to the sepals but smaller, concave, adnate by their edges. *Stamens* 4, inserted on a thick fleshy cushion-like circular disc by short filaments; *anthers* short, broadly ovate, cordate, introrse. *Ovary* one-celled, crowned by the fleshy disc. *Fruit* ellipsoid, not compressed, attenuate towards the apex, smooth, 1.2 in. long and .6 in. in diam.

MALACCA: *Maingay* (K.D.) 711. SINGAPORE: *T. Anderson*, Kurz.

VAR. *sub-tomentosa*, King. The tomentum minute, the panicles somewhat shorter, otherwise as in the typical form. *M. Junghuhniana*, Clarke not of Miq. in Hook. fil. Fl. Br. Ind. II, 746.

SINGAPORE: *Ridley* 6293, 6340. PENANG: *Curtis* 1564. MALACCA: *Maingay* (K.D.) 709.

5. *MASTIXIA CLARKEANA*, King n. sp. A tree 40 to 60 feet high; young branches slender, striate, glabrous. *Leaves* opposite, thinly coriaceous, oblong or oblong-lanceolate, narrowed to the rounded or sub-acute base; the apex rather abruptly and somewhat bluntly acuminate; both surfaces glabrous, the upper pale olivaceous-green, the lower dull, pale brownish when dry; main-nerves 5 to 6 or 7 pairs, ascending, slightly curved, impressed on the upper surface, prominent on the lower; length 3 to 4 in.; breadth 1 to 1.35 in.; petiole .3 to .35 in. *Cymes* terminal, nearly as long as (or sometimes longer than) the leaves, pedunculate, with rather numerous many-flowered angular puberulous branches: bracteoles minute, opposite in pairs, lanceolate or ovate, concave. *Flowers* .1 in. long, sessile. *Calyx* funnel-shaped, pubescent outside, the mouth with 4 deep broadly ovate teeth. *Corolla* depressed-globular in bud. *Petals* 4, nearly as long as the calyx-teeth, ovate-rotund, concave. *Stamens* 4: anthers short, ovate-rotund, filaments short. *Disc* fleshy, 4-lobed. *Style* short, compressed. *Stigma* concave. *Fruit* unknown.

PERAK: *Scortechini* 98, 625, 869; *King's Collector* 10361.

VAR. *macrophylla*, King. *Leaves* ovate-elliptic, shortly acuminate; main nerves 7 pairs: flowers as in the typical form.

PERAK: *Scortechini* 10575.

There are in Herb. Cal. specimens belonging to four distinct species of *Mastixia* which are too imperfect to be named, and which I have been unable to match with any already described species. These are as follows:—

(a). Two gatherings (*Wray* 1234 and *King's Collector* 2907) of a plant collected at an elevation of from 3000 to 3400 feet in Perak which is evidently a *Mastixia*. In their leaves these resemble *M. Maingayi*, Clarke, var. *sub-tomentosa*, King; but the under surfaces are more glabrous and the main-nerves are rather more oblique than in that plant; the young branches are moreover of a dark colour and almost glabrous, while those of *M. Maingayi* are pale and rufescently tomentose. These specimens are in fruit, and none of them has a single flower. The fruit is narrowly ellipsoid, attenuate gradually to the apex, smooth, 1.2 in. long, and .4 in. in diam. While the leaves suggest a relationship to *M. Maingayi*, the remains of the calyx-lobes at the apex of the fruit, which are 4-lobed, suggest perhaps a still closer affinity to the tetramerous species *M. Clarkeana*, King.

(b). A specimen from Penang (Herb. *Curtis* 919) which is in fruit only.

(c). Specimens of a tetramerous species (in fruit only) from the Andamans with leaves otherwise like those of *M. pentandra*, Bl., but obscurely serrate.

(d). Two specimens collected by Mr. Wray at an elevation of 6,700 feet in Perak. These are in fruit; their leaves resemble those of *M. gracilis*, King, but have the main-nerves fewer but bolder.

2. ALANGIUM, Lamk.

Shrubs or trees. *Leaves* alternate, petiolate, entire, persistent. *Flowers* in axillary fascicles or short cymes, hermaphrodite, hairy, jointed on their pedicels; bracts small or 0. *Calyx-tube* adnate to the ovary, the limb toothed or truncate. *Petals* 5 or 6 (rarely more), linear-oblong, valvate, sometimes becoming reflexed. *Stamens* equal in number to or twice as many as the petals or more; the anthers, long, linear; the filaments short compressed, often hairy. *Ovary* inferior, 1- to 3-celled, or 1-celled at the apex and 2- to 3-celled at the base, surmounted by a fleshy disc: *style* very long often clavate; *stigma* large, capitate or pyramidal; *ovule* pendulous. *Fruit* a berry, often with very scanty pulp, crowned by the slightly enlarged calyx. *Seed* oblong, compressed; albumen fleshy, sometimes ruminant; cotyledons leafy, flat or crumpled: radicle long or short.—*DISTRIB.* About 16 species, in tropical and sub-tropical Asia and Africa, Australia, Polynesia.

Stamens (in Malayan specimens) more than 6 (usually 15 to 20): fruit only slightly compressed ... 1. *A. Lamarckii*.

Stamens 5 or 6; fruit much compressed:—

Leaves oblique, membranous:—

Cymes on comparatively long peduncles, much-branched, many-flowered ... 2. *A. uniloculare*.

Leaves not oblique, coriaceous:—

Cymes on short peduncles; flowers 6 to 12, shortly pedicelled and 1 in. in diam.; leaves glabrous above and minutely scaly underneath ... 3. *A. ebenaceum*.

Cymes sessile, 3- to 5-flowered; flowers 25 in. in diam.; leaves glabrous on both surfaces ... 4. *A. Ridleyi*.

Cymes on very short peduncles, 4- to 8-flowered: flowers 1 in. in diam.; leaves tomentose or pubescent on lower surface ... 5. *A. nobile*.

1. *ALANGIUM LAMARCKII*, Thwaites Enum. Pl. Ceyl. 133. A shrub or small tree. *Leaves* variable in form and size, those of the Malayan specimens oblong-elliptic, elliptic to elliptic-ovate or ovate-rotund, the base rounded or slightly cordate, the apex with a short blunt apiculus; upper surface glabrous or nearly so, the lower with a few scattered hairs; main-nerves 4 or 5 pairs, reticulations distinct; length 3 to 6 in.; breadth 2 to 3.5 in.; petiole 2 to 3 in. *Flowers* in short dense fascicles of 4 to 8, about .75 in. long; peduncles, pedicels and outside of calyx rusty-tomentose. *Calyx* cupular, slightly 6-toothed. *Petals* lanceolate,

sub-acute, externally hairy, inside glabrous but with a hairy mesial line. *Stamens* about 18, two opposite each petal and one opposite each sepal, free; filaments slender pilose; *anthers* linear reaching almost to the apices of the petals. *Disc* annular, wavy. *Style* as long as the stamens, 6-grooved; stigma 3-lobed. *Fruit* ellipsoid, slightly compressed, contracted below the disc-bearing mouth, densely and minutely tomentose, .75 to 1 in. long and .65 in. in diam. Dalz. & Gibs. Fl. Bombay 109; Brandis For. Fl. N.-W. India 250; Clarke in Hook. fil. Fl. Br. Ind. II, 741; Trimen Fl. Ceylon I, 285. *A. decapetalum*, Lamk. Dict. I, t. 174; DC. Prodr. III, 203; Wall. Cat. 6884; W. & A. Prodr. 325; Wight Ic. t. 194 Miq. Fl. Ind. Bat. I, Pt. I, 774; Kurz For. Fl. I, 543. *A. hexapetalum*, Lamk. and DC. ll. c.; Roxb. Hort. Beng. 38, Fl. Ind. II, 502; Wall. Cat. 6883; W. & A. Prodr. 326; Wight Ill. t. 96. *A. sundanum*, Miq. Fl. Ind. Bat. I, Pt. I, 774; Kurz. l.c. *A. tomentosum*, Lamk. and DC. ll. c.; Wall. Cat. 6885. *A. latifolium*, Miq. in Pl. Hohenack. No. 719.—Rheede Hort. Mal. IV, tt. 17, 26.

PERAK: *Scortechini*; King's Collector 5590. SINGAPORE; Ridley 6020.—DISTRIB. Brit. India, Malayan Archipelago, S. China, Philippines, East Africa.

VAR. *glandulosa*, Clarke in Hook. fil. Fl. Br. Ind. II, 742. A large climber. *A. glandulosa*, Thw. Enum. Pl. Ceyl. 133; Trimen Fl. Ceyl. II, 286.

ANDAMAN and NICOBAR ISLANDS. DISTRIB. CEYLON.

2. *ALANGIUM UNILOCULARE*, King. A tree 30 to 60 feet high; young branches minutely rusty-pubescent, slender. *Leaves* membranous, obliquely ovate-lanceolate or oblong-lanceolate, acuminate, the base unequal, one side rounded the other acute, the edges somewhat wavy; upper surface glabrous except the tomentose midrib and pubescent main-nerves; the lower sparsely sub-adpressed pubescent and minutely glandular; main-nerves 4 to 6 pairs, ascending, the lower on one side much branched, all slightly prominent on both surfaces; the main-veins sub-parallel; length 3.5 to 5.5 in.; breadth 1.75 to 2.25 in.; petiole .25 to .3 in., villous. *Cymes* axillary, about one-third of the length of the leaves, pedunculate; the branches spreading, rusty pubescent, many-flowered. *Flowers* about .4 in. long, with subulate bracteoles and short pedicels. *Calyx-tube* funnel-shaped, not grooved, the mouth minutely toothed. *Petals* 5, linear; *anthers* linear; filaments short, broad, woolly at the apex. *Style* cylindric, pubescent; stigma subglobose. *Fruit* ovate in outline, much tapered to the apex, compressed, faintly ridged when dry, .6 in. long and .35 in. broad when dry. *Marlea unilocularis*, Griff. Notul. IV, 679. *M. Griffithii*, Clarke in Hook. fil. Fl. Br. Ind. II, 742.

MALACCA : *Griffith* (K.D.) 3387; *Maingay* 708. PERAK : *Wray* 2927, 3486; *Scortechini* 1914; *King's Collector*—many numbers.

3. *ALANGUIM EBENACEUM*, *Griffith* MSS. A tree 30 to 70 feet high; young branches rather slender, smooth, dark-coloured when dry. *Leaves* coriaceous, oblong, slightly acuminate, the base cuneate or rounded; upper surface glabrous, the lower with numerous minute pale scales; main-nerves 13 to 16 pairs, spreading, very slightly curved, prominent on the lower surface; length 6 to 10 in.; breadth 2·5 to 4 in.; petiole ·35 to ·8 in. long. *Cymes* from as long to twice as long as the petioles, on short peduncles, axillary, branched, 6- to 12-flowered. *Flowers* sessile, ·65 in. long, and only ·1 in. in diam. *Calyx* cupular slightly grooved; the mouth truncate, slightly toothed. *Petals* 6 (sometimes only 5), linear, minutely pubescent externally. *Stamens* 6 (or 5); *anthers* about as long as the petals, linear; filaments short, compressed, woolly in front. *Style* cylindric-clavate, shortly hairy; stigma pyramidal. *Fruit* ovate in outline, compressed, faintly ridged, about 1 in. long and ·6 in. wide. *Marlea ebenacea*, *Clarke* in *Hook. fil. Fl. Br. Ind.* I, 742.

MALACCA : *Griffith* (K.D.) 3384. *Maingay* (K.D.) 706. PERAK : *Wray* 3302; *Scortechini* 1963; *King's Collector* 3252, 5363, 6562, 6626.

4. *ALANGIUM RIDLEYI*, *King*. A tree; young branches covered with minute deciduous scales and hairs, rather slender. *Leaves* coriaceous, elliptic, sometimes slightly obovate, shortly and bluntly acuminate, the base cuneate; both surfaces glabrous; main-nerves 10 pairs spreading, slightly curved upwards, bold and prominent on the lower surface; connecting veins parallel, faint; length 6 to 8 in.; breadth 2·5 to 3·5 in.; petioles ·9 to 1·3 in. *Cymes* as long as or rather shorter than the petioles, sessile, 3- to 5-flowered. *Flowers* nearly 1 in. long, ·25 in. in diam. their pedicels ·2 to ·25 in. long, minutely velvety-tomentose like the outside of the calyx and petals. *Calyx* campanulate, slightly furrowed, the mouth wide truncate. *Petals* 6, thick, grooved and minutely hairy inside, oblong-lanceolate, sub-acute. *Stamens* somewhat shorter than the petals; *anthers* narrowly linear, with a tuft of hairs at the base; filaments short flat almost glabrous. *Style* slender clavate; stigma deeply furrowed, disc 6-angled cushion-like, glabrous. *Fruit* unknown.

SINGAPORE, in the Botanic Garden Jungle, *Ridley* 4941.

Ridley's specimens are without fruit. Mr. *Wray* has sent from Perak some specimens (*Herb. Wray* 3632) of a plant in fruit which in spite of its considerably larger leaves (nearly a foot long), may be conspecific with this. These fruits are narrowly ellipsoid, much compressed and deeply furrowed, narrowly to the base, less so to the truncate apex. *A. costata*, *Boerl.* MSS. is the nearest ally of both.

5. *ALANGIUM NOBILE*, Harms. A tree 60 to 100 feet high: young branches and petioles velvety rusty-tomentose. *Leaves* coriaceous, elliptic to ovate-elliptic, rarely slightly obovate, entire, the base slightly cordate rarely sub-acute, the apex blunt or very shortly and bluntly acuminate; upper surface almost glabrous, the midrib and nerves minutely tomentose: lower surface densely and minutely tomentose or pubescent; main-nerves 8 to 10 pairs, spreading, slightly curved, very bold on the lower surface when dry, the secondary nerves transverse and bold; length 4·5 to 12 in.; breadth 3 to 6·5 in.; petiole ·8 to 1·75 in. *Cymes* on very short peduncles, 4- to 8-flowered, shorter or slightly longer than the petioles. *Flowers* ·5 or ·6 in. long and ·1 in. in diam.; their pedicels very short and thick. *Calyx* narrowly campanulate; deeply 6-grooved; the mouth with 6 deep lanceolate spreading teeth. *Petals* thick, narrowly oblong, sub-acute, tomentose, especially outside, sub-glabrous inside. *Stamens* 6, shorter than the petals, filaments short villous inside; *anthers* linear. *Style* cylindric, adpressed villous; stigmas linear. *Disc* glabrous, deeply 6-lobed. *Fruit* compressed, ridged, ellipsoid in outline, slightly contracted at both ends, tomentose, about 1 in. long and ·65 in. broad. *Marlea nobilis*, Clarke in Hook. fil. Fl. Br. Ind. II, 743.

MALACCA: *Griffith* (K.D.) 3384, 3385. *Maingay* (K.D.); 705, 707. PERAK: *King's Collector* 6047, 6116, 10892. SINGAPORE: *Maingay*; *Ridley* 5077.

Beccari collected in Borneo specimens (Herb. Becc. P.B. 3611) of a species closely allied to this, the flowers of which are however longer (·85 in.) with the calyx-tube much less prominently grooved.

3. *NYSSA*, Linn.

Trees (or shrubs), innovations silky. *Leaves* alternate, petioled, entire. *Flowers* capitate, on axillary peduncles, polygamo-dioecious, 1 or few females and many males in a head, each 3-4-bracteolate, or the males irregularly coalescing. MALE: calyx short, cup-shaped, 5-7-toothed; petals 5-7, imbricate, hairy; stamens usually 10 (in the Indian species) around a large circular disc; rudiment of the ovary 0 or small. FEMALE: calyx-tube campanulate; limb 5-toothed; petals 0 or minute; rudimentary stamens none; ovary 1-celled; style cylindric, simple or shortly 2-fid; ovule solitary, pendulous. *Berry* oblong or ovoid. *Albumen* copious; cotyledons flat, leafy, nearly as broad as the seeds.—DISTRIB. Species 5-6, in N. America, and from Sikkim to Java.

NYSSA SESSILIFLORA, Hook. fil. in Gen. Plantar. I, 952. A tree. *Leaves* sub-coriaceous, oblanceolate or elliptic-lanceolate tapering to each end, length 4 to 8 in.; breadth 1·5 to 2·5 in.; petiole ·6 to ·8 in.; both surfaces minutely punctate; main-nerves 6 to 8 pairs, spreading.

Peduncles puberulous, .5 to 1 in. long. *Ripe fruit* oblong-ovoid, smooth, crowned by the small circular calyx, .6 to .75 in. long when dry. Clarke in Hook. fil. Fl. Br. Ind. II, 747. *Daphniphyllopsis capitata*, Kurz For. Fl. I, 240; and in Journ. As. Soc. 1875, Pt. II, 201, with fig. *Ilex daphniphylloides*, Kurz in Journ. As. Soc. 1870, Pt. II, 72. *Agathisanthes javanica*, Blume Bijl. 645; Miq. Fl. Ind. Bat. I. Pt. I. 839. *Cerato-stachya arborea*, Blume Bijl. 644; Miq. l.c.

PERAK: at elevat. of 3,400 feet, Wray.—DISTRIB. Sumatra, Forbes 2880: Beccari (P.S.) 17, 335; Java; Trop. Eastern Himalaya; Khasia Hills.

IV.—*Noviciæ Indicæ XIX. A new Indian Dendrobium.*—By D. PRAIN.

[Received February 26th; Read March 6th, 1902.]

Among the Orchids that flowered in the Royal Botanic Garden, Calcutta, during 1901, one of the most beautiful was a *Dendrobium* that differs from any of the Indian species hitherto described. To be assured that the plant is in reality a previously unknown species a drawing from life has been compared with the material and drawings preserved in the great national collection at Kew. The following description of the plant is now therefore offered.

DENDROBIUM REGIUM Prain; *caulibus* erectis parum compressis; *foliis* oblongo-lanceolatis versus apicem oblique retusum vel incisum angustatis; *floribus* 2-3 pedunculo brevi subracemosis, pedunculis e caulis aphylli nodis orientibus; *sepalis* lineari-oblongis obtusis roseo-purpureis lineis rubro-purpureis notatis; *petalis* ellipticis roseo-purpureis lineis rubro-purpureis reticulatis; *mento* brevi lato; *labio* lituiformi aliquantum angustato, limbo roseo-purpureo lineis rubro-purpureis reticulato, glabro; tubo pallide flavo.

HAB. In provinciis Hindustaniæ inferioribus.

Stems 8-12 cm. long, 1.3 cm. thick; nodes 3 cm. apart. *Leaves* 8-40 cm. long, 1.5 cm. wide, tips distinctly obliquely notched. *Peduncles* 2 cm. and pedicels 4 cm. long; bracteoles adpressed, lanceolate, under 1 cm. long. *Flowers* 8 cm. across, magenta with darker lines and transverse markings; *mentum* 1.25 cm. long; *sepals* 1 cm. and *petals* 2.75 cm. wide; *lip* 4 cm. long.

This species is very nearly related to *D. nobile* Lindl. but is quite distinct from any of the known varieties of that somewhat variable species. In the nearly uniform coloration of the sepals and petals (though not in the colour itself) it approaches most closely the form of *D. nobile* distinguished and figured by Lindley, *Sertum* t. 18, as *D. coerulescens*. That plant, however, has a lip with purple throat and yellow margin; the present species has a cream-coloured tube and throat with a magenta limb coloured and marked like the petals and sepals. The lip of *D. regium* s, more over, narrower than in any form of *D. nobile* and is not pubescent.
